Stages of labor

Stage	Definition	
1	**Latent**	0-6 cm cervical dilation
	Active	6-10 cm (complete) cervical dilation
2	10 cm (complete) cervical dilation to delivery	
3	Delivery of baby to expulsion of placenta	

Features of symptomatic neurosyphilis

Early neurosyphilis	Meningitis	• Headache, confusion, nausea/vomiting, stiff neck
	Ocular	• Posterior uveitis (most common) • Decreased visual acuity • Often with syphilitic meningitis
	Meningovascular	• Infectious CNS arteritis causing ischemia &/or infarction
Late neurosyphilis (tertiary)	General paresis	• Progressive dementia
	Tabes dorsalis (uncommon)	• Posterior column/dorsal root disease • Pupillary defect, diffuse neurologic signs • May have normal CSF

Monosymptomatic (isolated) enuresis	
Definition	Urinary incontinence in children age ≥5
Workup	• Urinalysis • Urologic imaging for children with significant daytime symptoms & history of recurrent UTI
Management	• Behavior modifications ◦ Avoid sugary/caffeinated beverages ◦ Void regularly during the day & immediately before bedtime ◦ Drink ample fluids in the morning & early afternoon; minimize fluid intake before bedtime ◦ Reward system (eg, “gold star” chart) • **Enuresis alarm**: 1st-line intervention when behavior modifications fail; best long-term outcome • Pharmacotherapy: Best for short-term improvement; high risk of relapse ◦ 1st-line: **Desmopressin** ◦ 2nd-line: Tricyclic antidepressants

Preferred antiarrhythmic therapy to maintain sinus rhythm in atrial fibrillation

Clinical condition	Preferred drugs
No structural heart disease	• Flecainide
Left ventricular hypertrophy	• Dronedarone • Amiodarone
Coronary artery disease without heart failure	• Sotalol • Dronedarone
Heart failure	• Amiodarone • Dofetilide
Recurrent AF symptoms refractory to antiarrhythmic drugs	• Radiofrequency catheter ablation

Management of hyperglycemia & diabetes mellitus in the hospital setting	
Step 1:	Classify diabetes • Type 1 (do not stop basal insulin) • Type 2 • Stress-induced hyperglycemia
Step 2:	Determine dietary status (eating normally, decreased oral intake, not eating)
Step 3:	Determine preadmission glycemic control & antidiabetic treatment regimen
Step 4:	Oral drugs are generally discontinued due to unpredictable response & risk of complications
Step 5:	Determine insulin regimen **Basal-bolus regimen** • Patients with type 1 • Patients with type 2 treated before admission with basal bolus regimen • Patients with type 2 inadequately controlled by sliding-scale-only regimen • Newly diagnosed diabetes mellitus with high glucose levels

Differential diagnosis of delayed gastric emptying

Mechanism	Common etiologies	Diagnostic tests
Intrinsic obstruction	• Peptic ulcer stricture • Gastric malignancy • Bezoar/foreign body • Gastric volvulus	• Endoscopy • Upper gastrointestinal contrast imaging (eg, barium swallow)
Extrinsic obstruction	• Usually malignant	• Computed tomography • Magnetic resonance imaging
Impaired motility	• Medication (especially anticholinergic effect) • Autonomic neuropathy (especially diabetic) • Nerve injury (especially post-surgical) • Idiopathic	• Nuclear gastric emptying study • Gastroduodenal manometry

Clinical features of carotid artery dissection	
Etiology	**Traumatic** • External mechanical injury (blunt trauma) • High-velocity chiropractic manipulation of cervical spine **Spontaneous** • Severe atherosclerotic disease • Poorly controlled hypertension • Collagen-vascular disorders (eg, Marfan syndrome, Ehlers-Danlos syndrome type IV) • Fibromuscular dysplasia (common in women) • Autosomal polycystic kidney disease
Signs/ symptoms	• Head/neck pain with thunderclap headache; sudden & severe onset suggests dissection • Partial Horner's syndrome—ptosis & miosis but **NO** anhidrosis • Transient ischemic attacks, ischemic stroke, or embolic stroke • Transient vision loss due to retinal artery occlusion or ischemic optic neuropathy

Selection biases	• **Ascertainment (sampling) bias:** Study population differs from target population due to nonrandom selection methods • **Nonresponse bias:** High nonresponse rate to surveys/questionnaires can cause errors if nonresponders differ in some way from responders • **Berkson bias:** Disease studied using only hospital-based patients may lead to results not applicable to target population • **Prevalence (Neyman) bias:** Exposures that happen long before disease assessment can cause study to miss diseased patients that die early or recover • **Attrition bias:** Significant loss of study participants may cause bias if those lost to follow-up differ significantly from remaining subjects
Observational biases	***Inaccurate measurement or classification of disease, exposure, or other variable*** • **Recall bias:** Common in retrospective studies, subjects with negative outcomes are more likely to report certain exposures than control subjects • **Observer bias:** Observers misclassify data due to individual differences in interpretation or preconceived expectations regarding study • **Reporting bias:** Subjects over- or under-report exposure history due to perceived social stigmatization • **Surveillance (detection) bias:** Risk factor itself causes increased monitoring in exposed group relative to unexposed group, which increases probability of identifying a disease

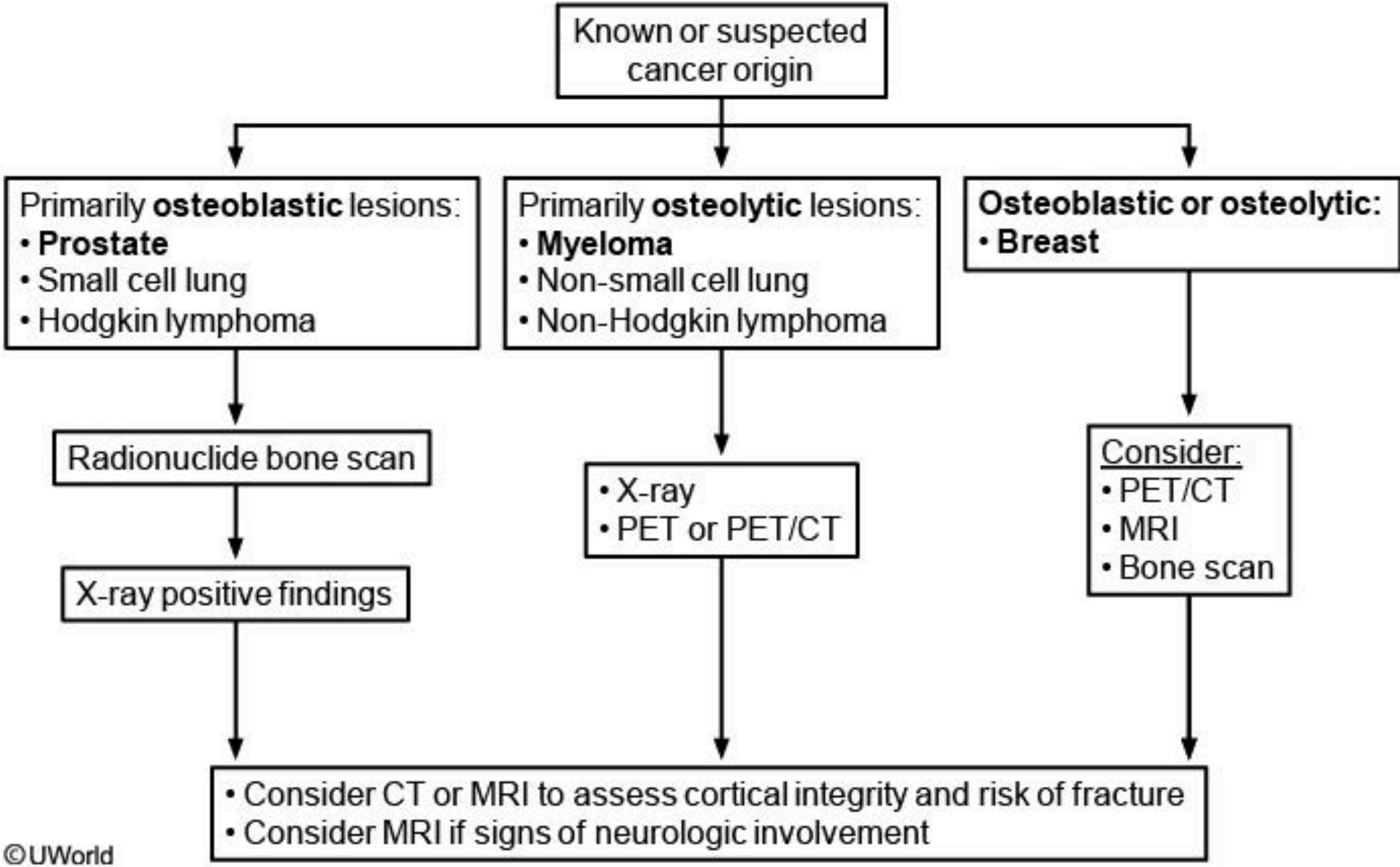
Common types of systematic errors in statistical studies	
Selection biases	***Inappropriate selection or poor retention of study subjects*** • **Ascertainment (sampling) bias:** Study population differs from target population due to nonrandom selection methods • **Nonresponse bias:** High nonresponse rate to surveys/questionnaires can cause errors if nonresponders differ in some way from responders • **Berkson bias:** Disease studied using only hospital-based patients may lead to results not applicable to target population • **Prevalence (Neyman) bias:** Exposures that happen long before disease assessment can cause study to miss diseased patients that die early or recover • **Attrition bias:** Significant loss of study participants may cause bias if those lost to follow-up differ significantly from remaining subjects

Croup (laryngotracheitis)	
Pathogenesis	Parainfluenza viral infection of the larynx & trachea
Epidemiology	• Age 6 months-3 years • Fall/early winter
Clinical features	• Inspiratory stridor • Barking cough • Hoarseness
Treatment	• Mild (no stridor at rest) ◦ Humidified air ◦ +/- oral corticosteroids • Moderate/severe (stridor at rest) ◦ Oral, intramuscular, intravenous, or nebulized corticosteroids ◦ Nebulized epinephrine

Management of skin abscess

Incision & drainage	Incision, drainage & antibiotic therapy
• Single abscess • Diameter <5 cm • No systemic signs of infection	• Diameter >5 cm • Multiple abscesses • Extensive surrounding cellulitis • Systemic signs of infection • Immunocompromised • Age <6 months

Evaluation of bone metastasis



Known or suspected cancer origin

Primarily **osteoblastic** lesions:
- **Prostate**
- Small cell lung
- Hodgkin lymphoma

Radionuclide bone scan

X-ray positive findings

Primarily **osteolytic** lesions:
- **Myeloma**
- Non-small cell lung
- Non-Hodgkin lymphoma

- X-ray
- PET or PET/CT

Osteoblastic or osteolytic:
- **Breast**

Consider:
- PET/CT
- MRI
- Bone scan

- Consider CT or MRI to assess cortical integrity and risk of fracture
- Consider MRI if signs of neurologic involvement

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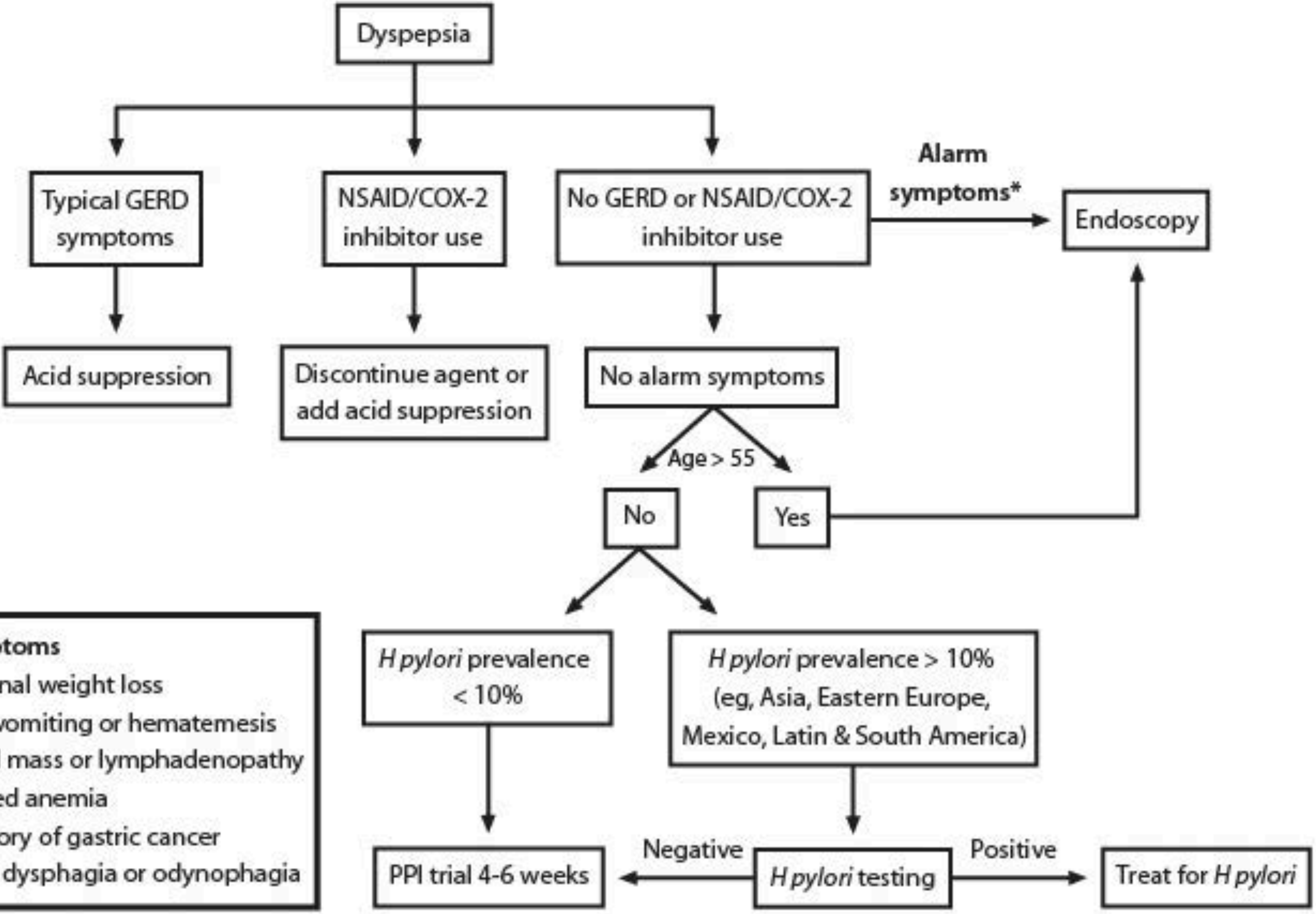
Antibiotics in pediatric sepsis		
Age	**Most common organisms**	**Empiric antibiotics**
≤28 days	• *Escherichia coli* • Group B *Streptococcus*	• Ampicillin **plus** • Gentamicin or cefotaxime
>28 days	• *Streptococcus pneumoniae* • *Neisseria meningitidis*	• Ceftriaxone or cefotaxime • +/- Vancomycin (when meningeal involvement is suspected)


Dyspepsia
Typical GERD symptoms
NSAID/COX-2 inhibitor use
No GERD or NSAID/COX-2 inhibitor use
Alarm symptoms*
Endoscopy
Acid suppression
Discontinue agent or add acid suppression
No alarm symptoms
Age > 55
No
Yes
H pylori prevalence < 10%
H pylori prevalence > 10% (eg, Asia, Eastern Europe, Mexico, Latin & South America)
PPI trial 4-6 weeks
Negative
H pylori testing
Positive
Treat for *H pylori*

***Alarm symptoms**

- Unintentional weight loss
- Persistent vomiting or hematemesis
- Abdominal mass or lymphadenopathy
- Unexplained anemia
- Family history of gastric cancer
- Worsening dysphagia or odynophagia

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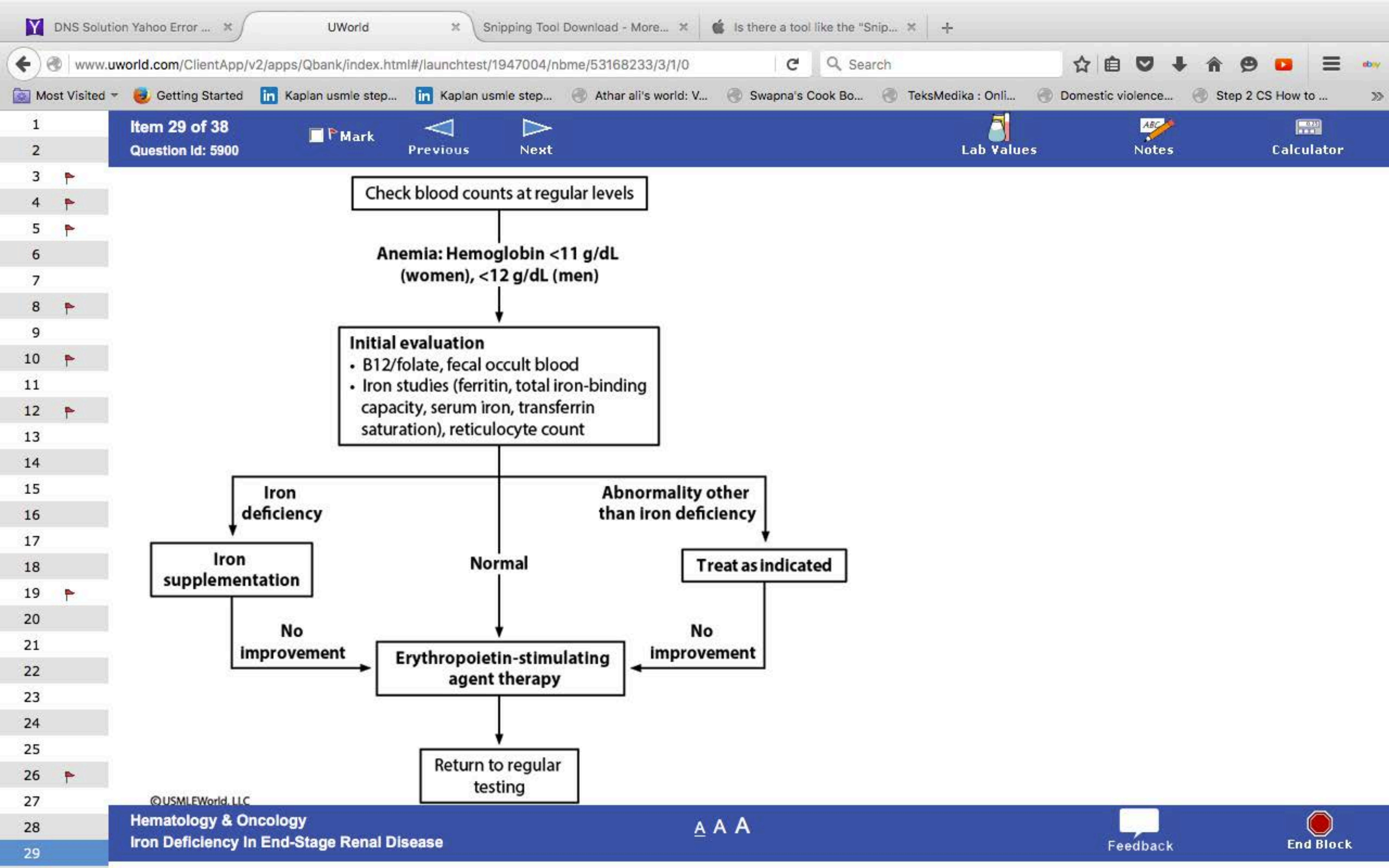
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Check blood counts at regular levels

Anemia: Hemoglobin <11 g/dL (women), <12 g/dL (men)

Initial evaluation
- B12/folate, fecal occult blood
- Iron studies (ferritin, total iron-binding capacity, serum iron, transferrin saturation), reticulocyte count

Iron deficiency → **Iron supplementation** → **No improvement** → **Erythropoietin-stimulating agent therapy**

Normal → **Erythropoietin-stimulating agent therapy**

Abnormality other than iron deficiency → **Treat as indicated** → **No improvement** → **Erythropoietin-stimulating agent therapy**

Erythropoietin-stimulating agent therapy → Return to regular testing

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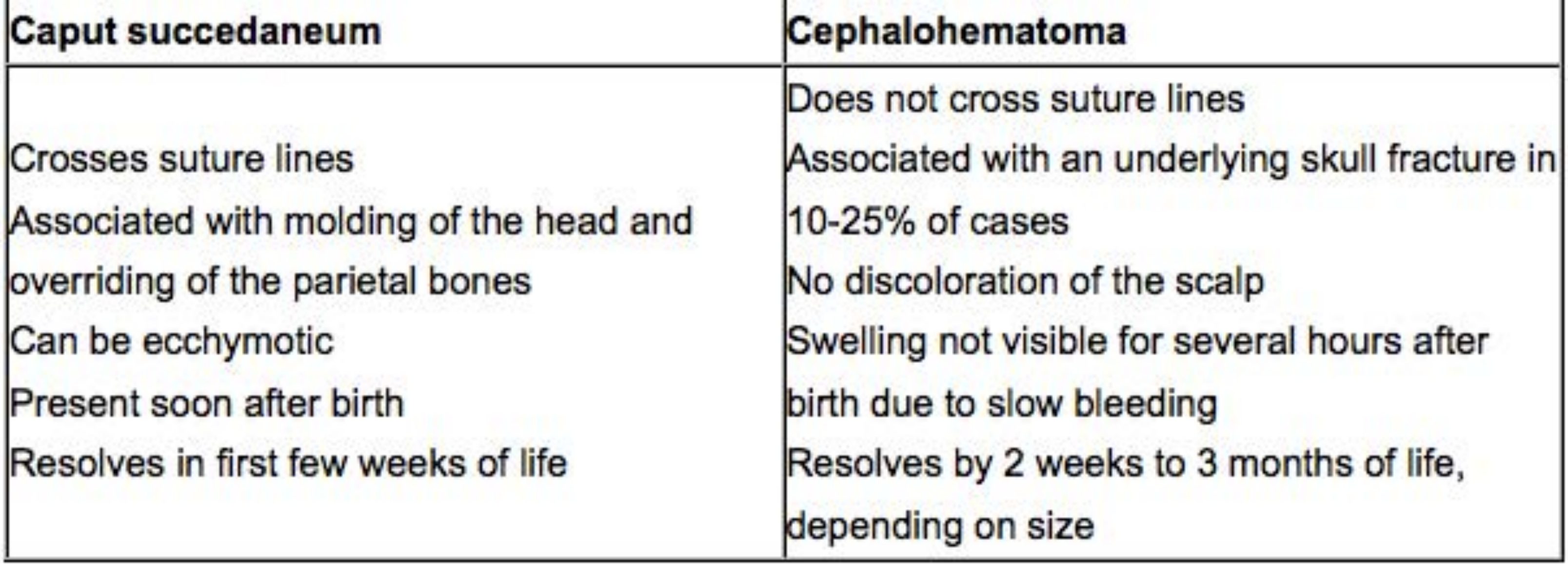
Hematology & Oncology
Iron Deficiency In End-Stage Renal Disease

syndrome ([ACS] - unstable angina/non ST-elevation myocardial infarction [NSTEMI]). All such patients should be managed with:

1. **Dual antiplatelet therapy** with aspirin and platelet P2Y12 receptor blockers (clopidogrel, prasugrel, or ticagrelor)
2. Nitrates
3. **Beta blockers**
4. **Statins**
5. **Anticoagulant therapy** (unfractionated heparin, low-molecular-weight heparin, bivalirudin, or fondaparinux)

	Type 1	Type 2
Pathophysiology	- Insulin deficiency	- Insulin resistance with relative insulin deficiency
Demographics	- Usually childhood to early adulthood - More common in whites	- Usually adulthood, but may be seen in children - More common in non-whites - More common in obese patients - Positive family history of diabetes
Onset of clinical features	- Usually rapid with osmotic symptoms	- Usually asymptomatic at onset
Diabetic ketoacidosis	- More common	- Less common
C-peptide levels	- Low	- Usually elevated
Pancreatic autoantibodies (eg, glutamic acid decarboxylase antibody)	- Usually present	- Usually absent



Caput succedaneum	Cephalohematoma
Crosses suture lines Associated with molding of the head and overriding of the parietal bones Can be ecchymotic Present soon after birth Resolves in first few weeks of life	Does not cross suture lines Associated with an underlying skull fracture in 10-25% of cases No discoloration of the scalp Swelling not visible for several hours after birth due to slow bleeding Resolves by 2 weeks to 3 months of life, depending on size

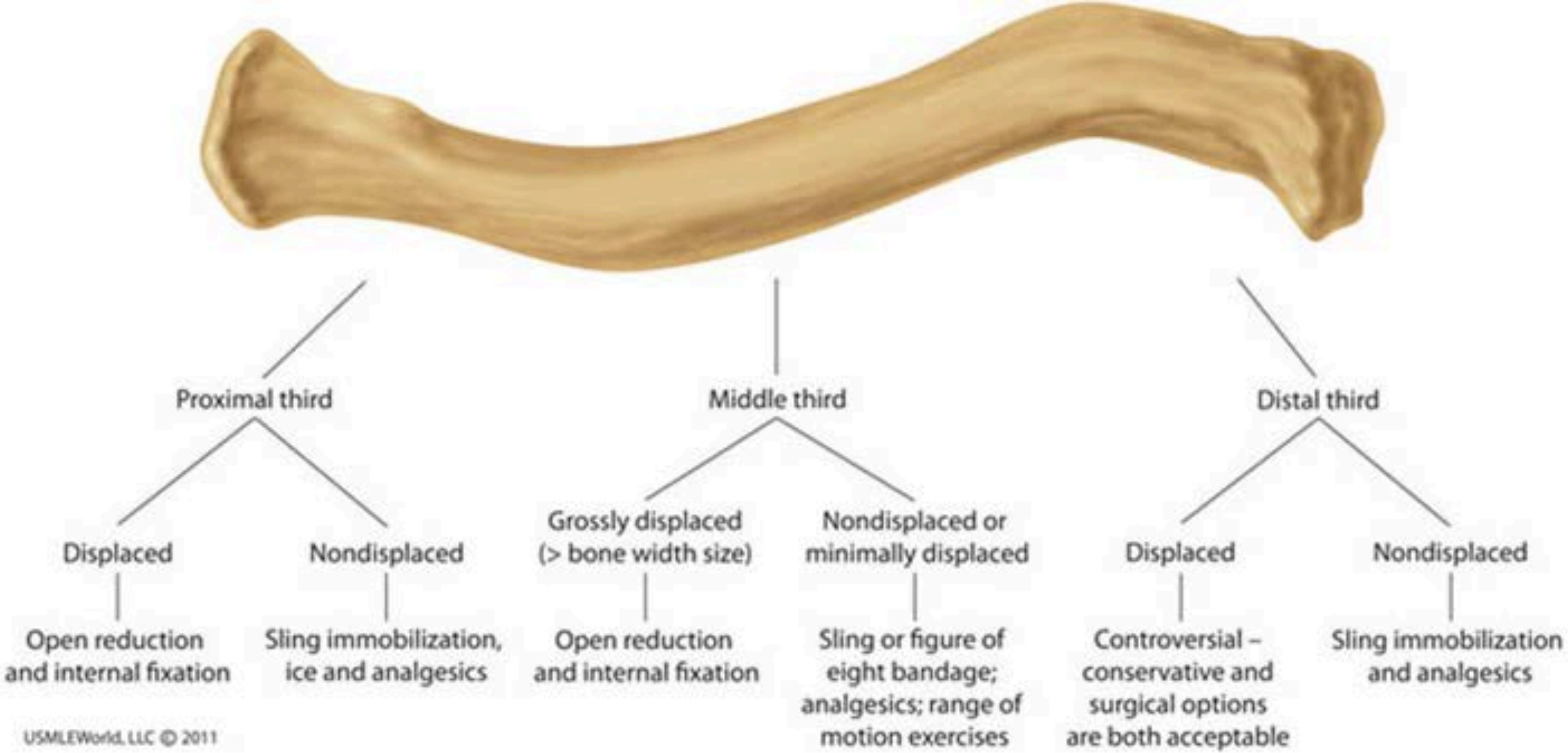
Indications for emergent head CT after minor head trauma

- GCS ≤14
- Signs of basilar skull fracture
    - “Battle sign” (mastoid ecchymoses)
    - “Raccoon eyes” (orbital ecchymoses)
    - Cerebrospinal fluid rhinorrhea or otorrhea
    - Hemotympanum
    - Cranial nerve deficits
- Altered mental status
- Symptomatic patient with bleeding diathesis (congenital or acquired)

Drugs/supplements that affect warfarin	
↑ **Warfarin effect** (↑ bleeding risk)	- Acetaminophen, nonsteroidal anti-inflammatory drugs - Antibiotics/antifungal agents - Amiodarone - Cranberry juice, ginkgo biloba, vitamin E - Omeprazole - Thyroid hormone - Selective serotonin reuptake inhibitors
↓ **Warfarin effect** (↓ in efficacy)	- Rifampin - Carbamazepine - Oral contraceptives - Ginseng - St John's wort - Green vegetables (eg, spinach)

Management of uncomplicated gallstones

Gallstones on imaging without symptoms	No specific treatment necessary in most patients
Gallstones on imaging with typical biliary colic symptoms	• Acute pain management • Prophylactic cholecystectomy (usually elective & laparoscopic) • Possible UDCA in poor surgical candidates or patients refusing surgery
Gallstones with atypical symptoms	• Empiric UDCA followed by cholecystectomy in patients whose symptoms improve with UDCA • Evaluate for other causes in patients not responding to UDCA
Typical biliary colic symptoms without gallstones on imaging	• Cholecystokinin-stimulated cholescintigraphy to evaluate for functional gall bladder disorder • Cholecystectomy in patients with low gall bladder ejection


Proximal third
Middle third
Distal third
Displaced
Nondisplaced
Grossly displaced (> bone width size)
Nondisplaced or minimally displaced
Displaced
Nondisplaced
Open reduction and internal fixation
Sling immobilization, ice and analgesics
Open reduction and internal fixation
Sling or figure of eight bandage; analgesics; range of motion exercises
Controversial – conservative and surgical options are both acceptable
Sling immobilization and analgesics

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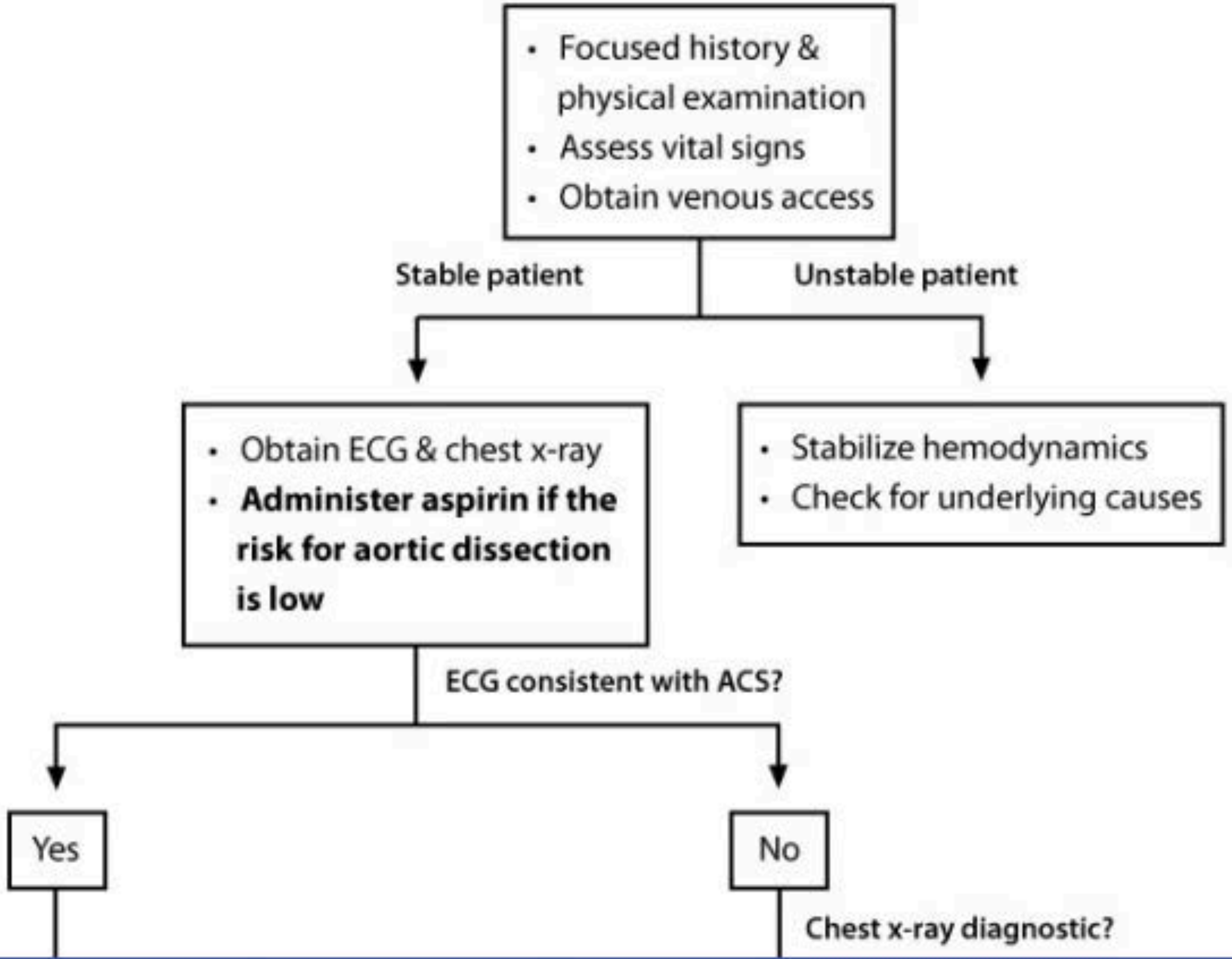
Common drugs affecting lithium levels

- Diuretics
- Nonsteroidal anti-inflammatory drugs, except aspirin
- Selective serotonin reuptake inhibitors
- Angiotensin-converting enzyme inhibitors & angiotensin receptor blockers
- Antiepileptics (eg, carbamazepine, phenytoin)

Evaluation of chest pain in the emergency department



- Focused history & physical examination
- Assess vital signs
- Obtain venous access

Stable patient

Unstable patient

- Obtain ECG & chest x-ray
- **Administer aspirin if the risk for aortic dissection is low**

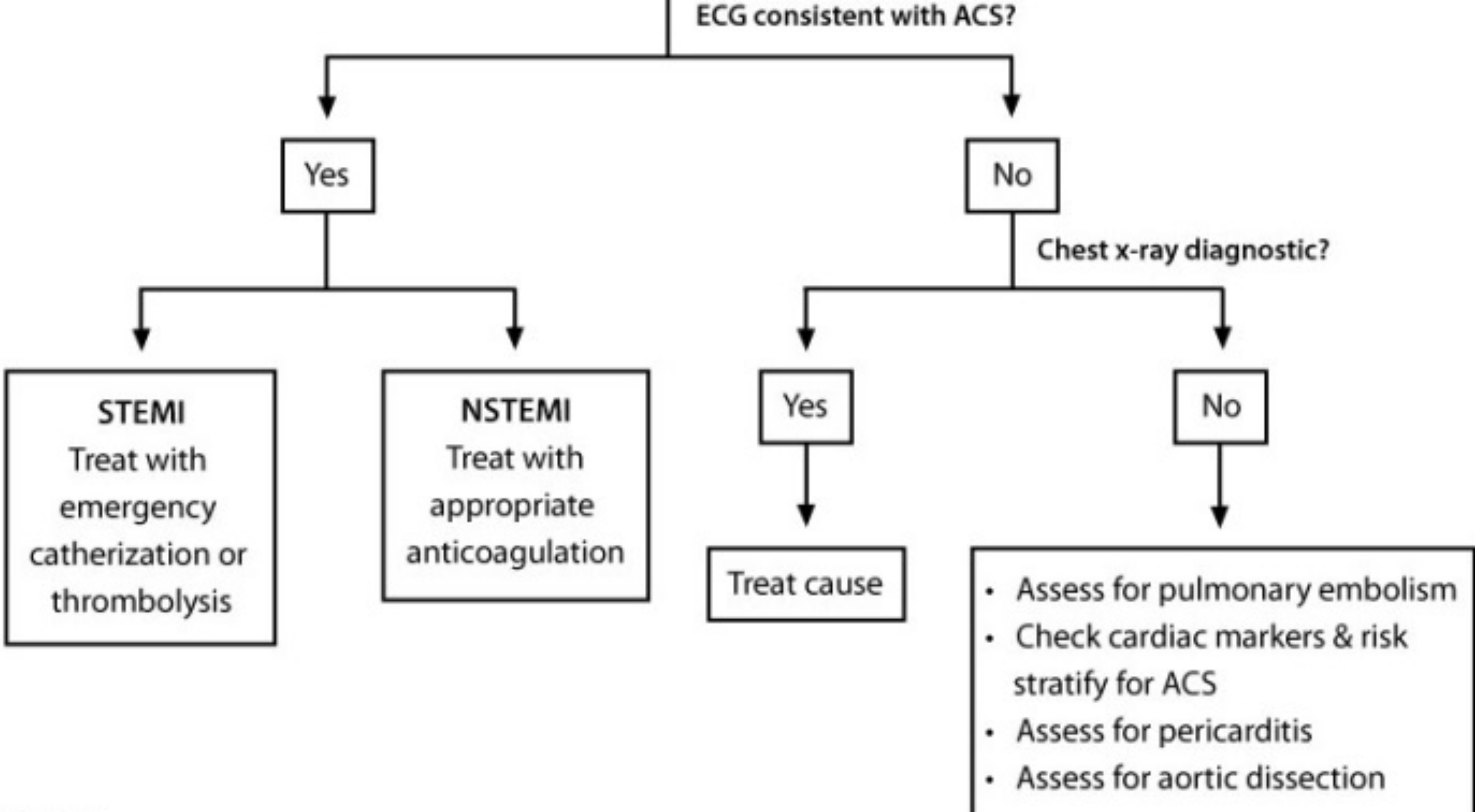
- Stabilize hemodynamics
- Check for underlying causes

ECG consistent with ACS?

Yes

No

Chest x-ray diagnostic?


ECG consistent with ACS?
Yes
No
Chest x-ray diagnostic?
STEMI
Treat with emergency catherization or thrombolysis
NSTEMI
Treat with appropriate anticoagulation
Yes
No
Treat cause
• Assess for pulmonary embolism
• Check cardiac markers & risk stratify for ACS
• Assess for pericarditis
• Assess for aortic dissection

Effect of drugs on thyroid metabolism

Drugs that increase TBG & decrease free T4 – may require higher dose of thyroxine replacement	Drugs that decrease TBG & increase free T4 – may require lower dose of thyroxine replacement
Estrogen	Androgens
Tamoxifen	Danazol
Raloxifene	Anabolic steroids
Methadone, heroin	Glucocorticoids

INR	Bleeding	Treatment
<5	None or minimal	Hold warfarin for 1 or 2 days or decrease dose
5–9	None or minimal	Hold warfarin and resume when INR is therapeutic; administer low-dose (1–2.5 mg) oral vitamin K if there is increased risk of bleeding
>9	None or minimal	Hold warfarin and administer high-dose (2.5–5 mg) oral vitamin K
Any	Serious or life threatening	Hold warfarin and administer intravenous vitamin K 10 mg, FFP, recombinant factor VIIa, or prothrombin complex concentrate

Management of DKA & HHS

IV fluids	• High-flow 0.9% normal saline is initially recommended • Add dextrose 5% when serum glucose is ≤200 mg/dL
Insulin	• Initial continuous **IV** insulin infusion • Switch to **SQ** (basal bolus) insulin for the following: Able to eat, glucose <200 mg/dL, anion gap <12 mEq/L, serum HCO_3 ≥15 mEq/L • Overlap SQ & IV insulin by 1-2 hours
Potassium	• Add IV potassium if serum K^+ ≤5.2 mEq/L • Hold insulin for serum K^+ <3.3 mEq/L • Nearly all patients K^+ depleted, even with hyperkalemia
Bicarbonate	• Consider for patients with pH <6.9
Phosphate	• Consider for serum phosphate <1.0 mg/dL, cardiac dysfunction, or respiratory depression • Monitor serum calcium frequently

Step 5: Determine insulin regimen

Basal-bolus regimen

- Patients with type 1
- Patients with type 2 treated before admission with basal bolus regimen
- Patients with type 2 inadequately controlled by sliding-scale-only regimen
- Newly diagnosed diabetes mellitus with high glucose levels

Insulin sliding scale only

Appropriate initially in patients with type 2 who are well controlled with diet &/or oral medications before admission. Basal insulin should be added if blood glucose is suboptimally controlled on sliding scale only.

Insulin infusion (may require transfer to the intensive care unit)

- Patients with type 1 who are not eating & with glucose levels suboptimally controlled with subcutaneous insulin
- Patients with type 1 perioperatively or during labor
- Hyperglycemic emergencies

The American Diabetes Association suggests the following **glycemic goals** in the hospital setting: premeal 100-140 mg/dL, post-meal/random <180 mg/dL, and 140-180 mg/dL in patients treated with insulin infusion.

Insulin is the mainstay of therapy for treating diabetes in the hospital setting and has 3 basic components:

1. **Basal** (intermediate or long-acting) insulin for controlling glucose levels between meals (necessary for all patients with type 1 diabetes and most with type 2 diabetes)
2. **Nutritional boluses** (short-acting) of insulin to control blood glucose increase following a meal (not required if patients are not eating)
3. **Correctional boluses** (short-acting) of insulin to decrease high glucose levels (commonly referred to as "sliding scale")

Catatonia associated with mental disorders (catatonia specifier)

DSM-5 criteria - 3 or more of the following:

- Stupor
- Catalepsy (passive induction of a posture held against gravity)
- Waxy flexibility (resistance to positioning)
- Mutism
- Negativism (resistance to instructions)
- Posturing (spontaneous postures against gravity)
- Mannerisms (odd movements)
- Stereotypy (repetitive, purposeless movements)
- Agitation
- Grimacing
- Echolalia (mimics speech)
- Echopraxia (mimics movements)

Management

- **Benzodiazepines (intravenous lorazepam)**
- Electroconvulsive therapy

Anticoagulation in atrial fibrillation

Nonvalvular atrial fibrillation

CHA$_2$DS$_2$VASc score	Stroke risk	Anticoagulant therapy
0	Low	None
1	Intermediate	None or aspirin or oral anticoagulant*
>2	High	Oral anticoagulant*

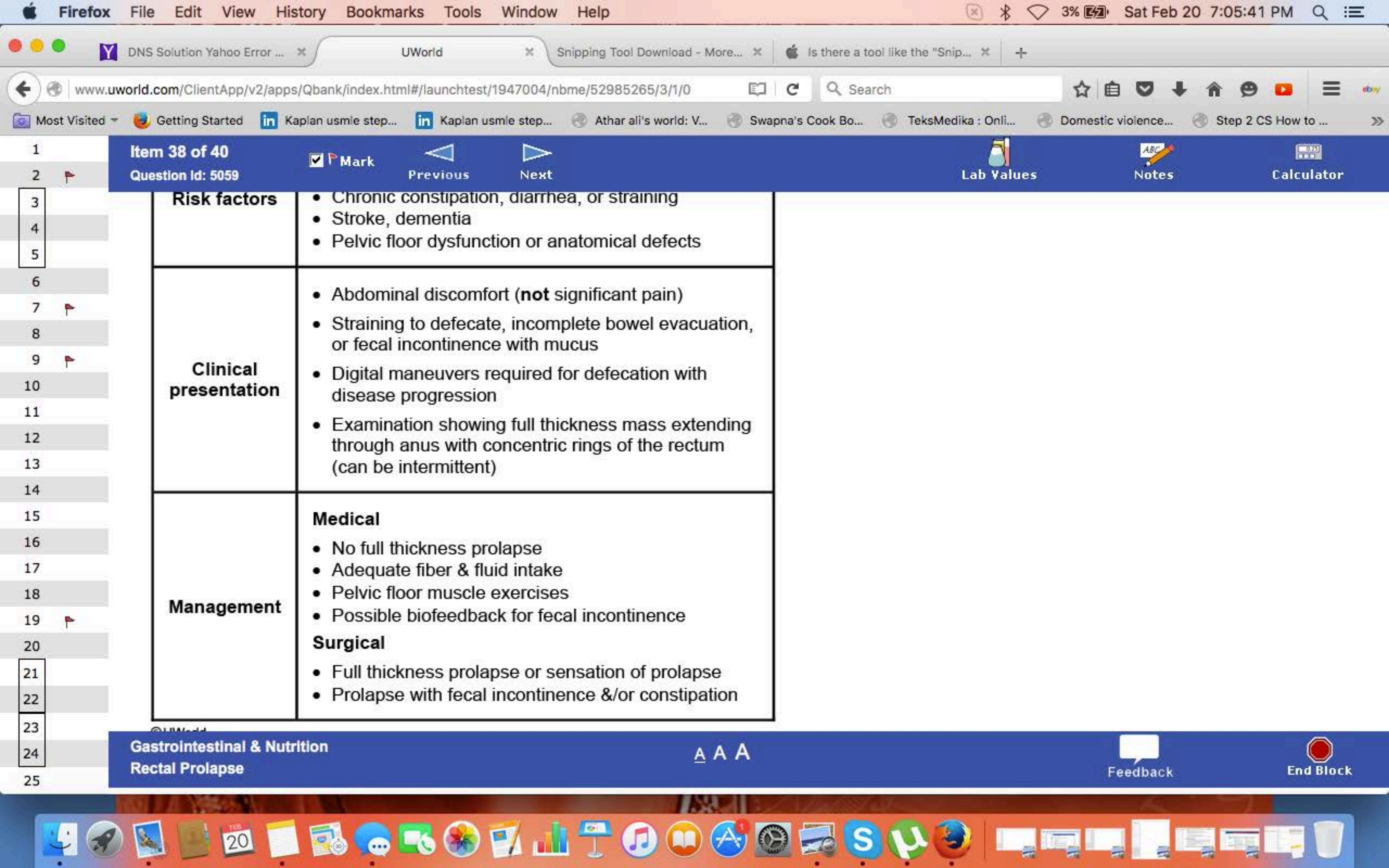
Valvular atrial fibrillation or mechanical/prosthetic valve

- Warfarin

Spinal epidural abscess	
Risk factors	• Intravenous drug use • Immunocompromised state (eg, diabetes mellitus, HIV, alcoholism) • Infectious spread from contiguous/distant source • Spinal trauma or surgery
Clinical features	• Classic triad: Fever, severe **focal** back pain & neurologic deficits • Progressive symptoms: Radiculopathy, motor & sensory deficits, bowel or bladder dysfunction & eventual paralysis
Management	• Complete blood count • Inflammatory markers (eg, ESR, CRP) • Blood cultures • **MRI of spine with gadolinium** • CT-guided aspiration/biopsy • Empiric antibiotics • Surgical decompression

Clinical features of rectal prolapse

Risk factors	• Women >age 40 with history of vaginal deliveries • Prior pelvic surgery • Chronic constipation, diarrhea, or straining • Stroke, dementia • Pelvic floor dysfunction or anatomical defects
Clinical presentation	• Abdominal discomfort (**not** significant pain) • Straining to defecate, incomplete bowel evacuation, or fecal incontinence with mucus • Digital maneuvers required for defecation with disease progression • Examination showing full thickness mass extending through anus with concentric rings of the rectum (can be intermittent)
Management	**Medical** • No full thickness prolapse • Adequate fiber & fluid intake • Pelvic floor muscle exercises • Possible biofeedback for fecal incontinence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Question Id: 5059

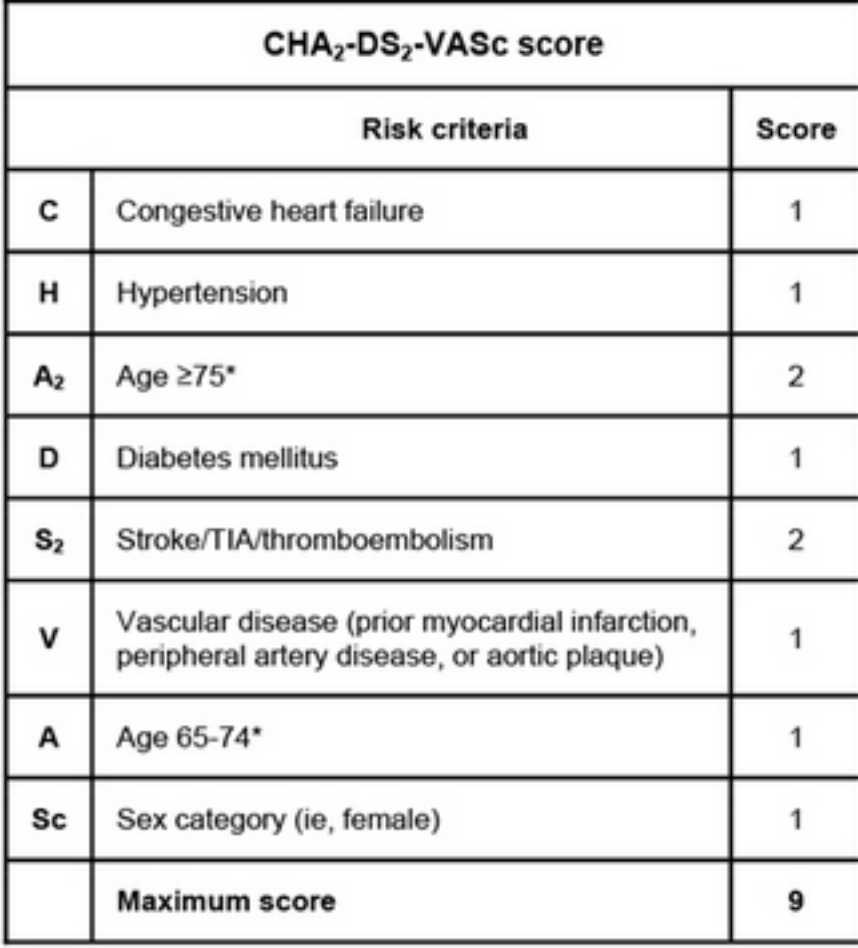
Risk factors	• Chronic constipation, diarrhea, or straining • Stroke, dementia • Pelvic floor dysfunction or anatomical defects
Clinical presentation	• Abdominal discomfort (**not** significant pain) • Straining to defecate, incomplete bowel evacuation, or fecal incontinence with mucus • Digital maneuvers required for defecation with disease progression • Examination showing full thickness mass extending through anus with concentric rings of the rectum (can be intermittent)
Management	**Medical** • No full thickness prolapse • Adequate fiber & fluid intake • Pelvic floor muscle exercises • Possible biofeedback for fecal incontinence **Surgical** • Full thickness prolapse or sensation of prolapse • Prolapse with fecal incontinence &/or constipation

Gastrointestinal & Nutrition
Rectal Prolapse

Osteoporosis risk factors

- Advanced age
- Medical history of fracture with minimal trauma (fragility fracture)
- Low body weight (<58 kg [127 lb])
- Family history of hip fracture
- Current smoking
- Excessive alcohol intake
- Medications (eg, steroids, anticonvulsants)
  - Secondary causes of osteoporosis
  - Premature menopause
  - Hypogonadism
  - Malabsorption (celiac disease)
  - Inflammatory disorders (eg, inflammatory bowel disease, rheumatoid arthritis)
  - Hyperthyroidism & hyperparathyroidism
  - Cushing syndrome
  - Vitamin D deficiency
  - Chronic liver or renal disease

Patient Status	**Recommended Dose of Folic Acid**
General population	0.4 mg/day for ≥1 month before conception through the first trimester
Women who take anticonvulsants or have had a child with a neural tube defect	4 mg/day for ≥1 month before conception through the first trimester



CHA$_2$-DS$_2$-VASc score

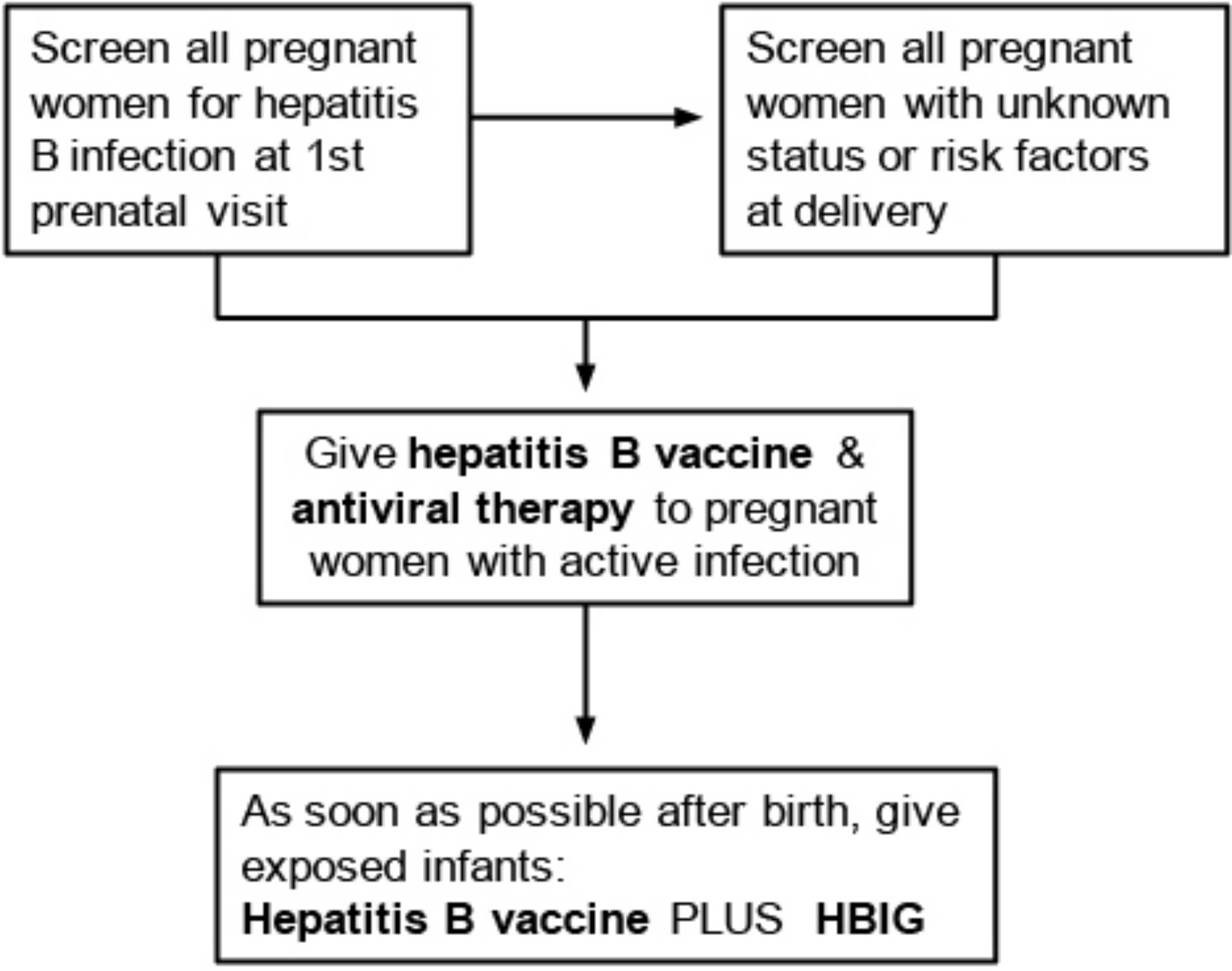
Risk criteria		Score
C	Congestive heart failure	1
H	Hypertension	1
A$_2$	Age ≥75*	2
D	Diabetes mellitus	1
S$_2$	Stroke/TIA/thromboembolism	2
V	Vascular disease (prior myocardial infarction, peripheral artery disease, or aortic plaque)	1
A	Age 65-74*	1
Sc	Sex category (ie, female)	1
	Maximum score	**9**

Clinical features of Marfan syndrome	
Skeletal	• Arachnodactyly • ↓ Upper-to-lower body segment ratio, ↑ arm-to-height ratio • Pectus deformity, scoliosis, or kyphosis • Joint hypermobility
Ocular	• Ectopia lentis
Cardiovascular	• Aortic dilation, regurgitation, or dissection • Mitral valve prolapse
Pulmonary	• Spontaneous pneumothorax from apical blebs
Skin	• Recurrent or incisional hernia • Skin striae

Standard pediatric immunizations

Inactivated (killed)	• Polio • Hepatitis A
Toxoid (inactivated toxin)	• Diphtheria • Tetanus
Subunit/ conjugate	• Hepatitis B • Pertussis • *Haemophilus influenzae* type B • Pneumococcal • Meningococcal • Human papillomavirus • Influenza (injection)
Live attenuated	• Rotavirus • Measles • Mumps • Rubella • Varicella • Influenza (intranasal)

Hepatitis B & pregnancy



Screen all pregnant women for hepatitis B infection at 1st prenatal visit

Screen all pregnant women with unknown status or risk factors at delivery

Give **hepatitis B vaccine** & **antiviral therapy** to pregnant women with active infection

As soon as possible after birth, give exposed infants:
Hepatitis B vaccine PLUS **HBIG**

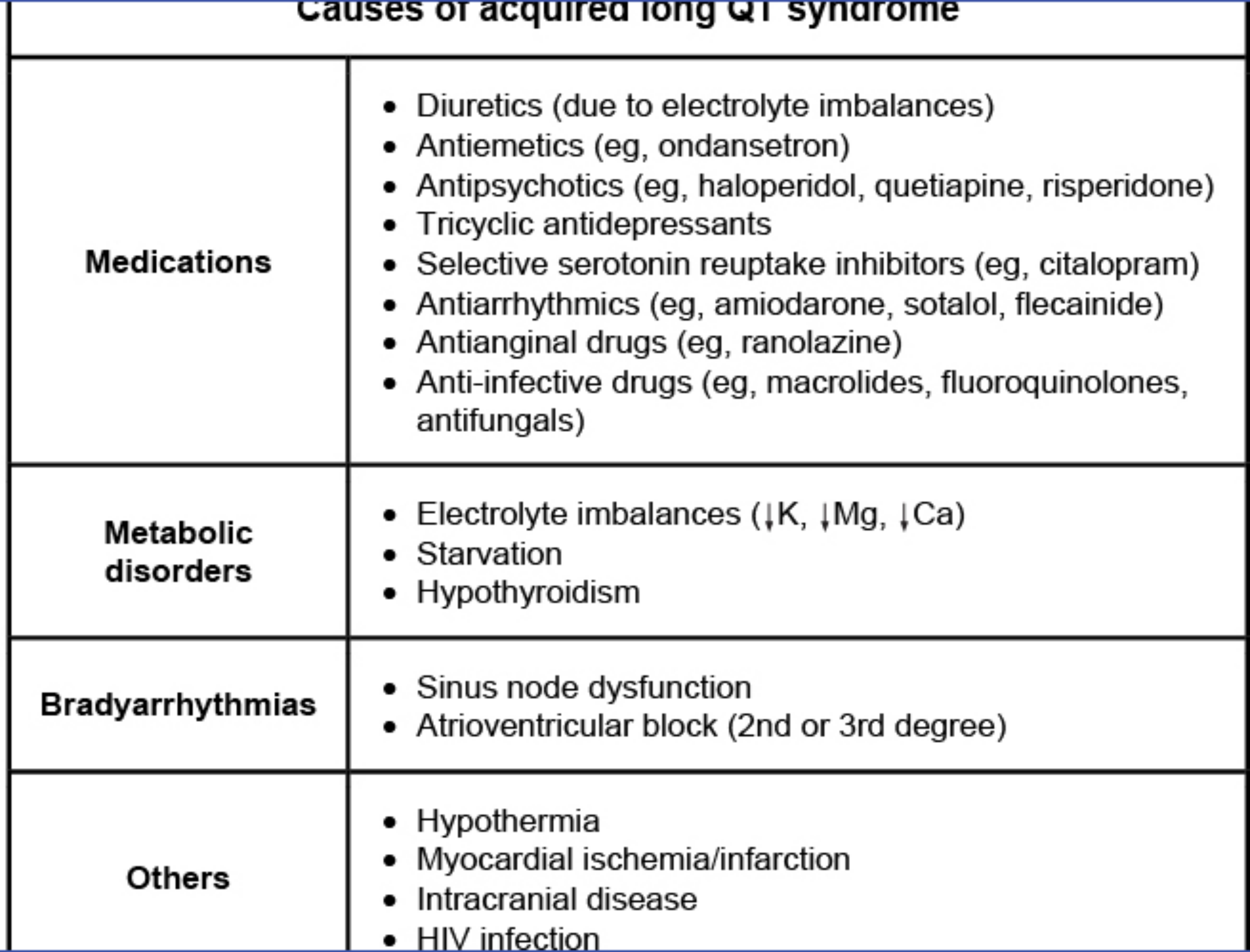
5 mm	• HIV infection • Recent contact with TB infected patient • Patient with fibrotic changes on chest radiograph suggestive of prior TB • Organ transplant recipient • Immunocompromise for other reason
10 mm	• Recent immigrant from a high prevalent country • Injection drug user • Residents and employees of high risk settings such as prisons, homeless shelters, and healthcare facilities • Children < 4 years of age
15 mm	• No known risk factor

Recommended vaccines for adults

	Age 19-64	Age ≥65
Td/Tdap	Tdap once as substitute for Td booster, then Td every 10 years	
Influenza	Annually	
Pneumococcus	**PPSV23 alone** • Chronic heart, lung, or liver disease • Diabetes, current smokers, alcoholics **Sequential PCV13 + PPSV23 (very high risk patients)** • CSF leaks, cochlear implants • Sickle cell disease, asplenia • Immunocompromised (eg, HIV, malignancy) • Chronic kidney disease	**Sequential PCV13 + PPSV23** • 1 dose of PCV13 followed by PPSV23 in 6-12 months

The recommended vaccines for adults include:

- Annual seasonal influenza vaccine
- The tetanus-diphtheria (Td) booster every 10 years with tetanus-diphtheria-pertussis (Tdap) as a one-time substitute
- 13-valent pneumococcal conjugate vaccine (PCV13) at age 65, followed by the 23-valent pneumococcal polysaccharide vaccine (PPSV23) in 6-12 months



Causes of acquired long QT syndrome	
Medications	• Diuretics (due to electrolyte imbalances) • Antiemetics (eg, ondansetron) • Antipsychotics (eg, haloperidol, quetiapine, risperidone) • Tricyclic antidepressants • Selective serotonin reuptake inhibitors (eg, citalopram) • Antiarrhythmics (eg, amiodarone, sotalol, flecainide) • Antianginal drugs (eg, ranolazine) • Anti-infective drugs (eg, macrolides, fluoroquinolones, antifungals)
Metabolic disorders	• Electrolyte imbalances (↓K, ↓Mg, ↓Ca) • Starvation • Hypothyroidism
Bradyarrhythmias	• Sinus node dysfunction • Atrioventricular block (2nd or 3rd degree)
Others	• Hypothermia • Myocardial ischemia/infarction • Intracranial disease • HIV infection

Persons needing antimicrobial prophylaxis following *Neisseria meningitidis* exposure

- Household members
- Roommates or intimate contacts
- Child care center workers
- Persons directly exposed to patient's respiratory or oral secretions (eg, kissing, mouth-to-mouth resuscitation, **endotracheal intubation**/management)
- Airline travelers seated next to an affected person for ≥8 hours

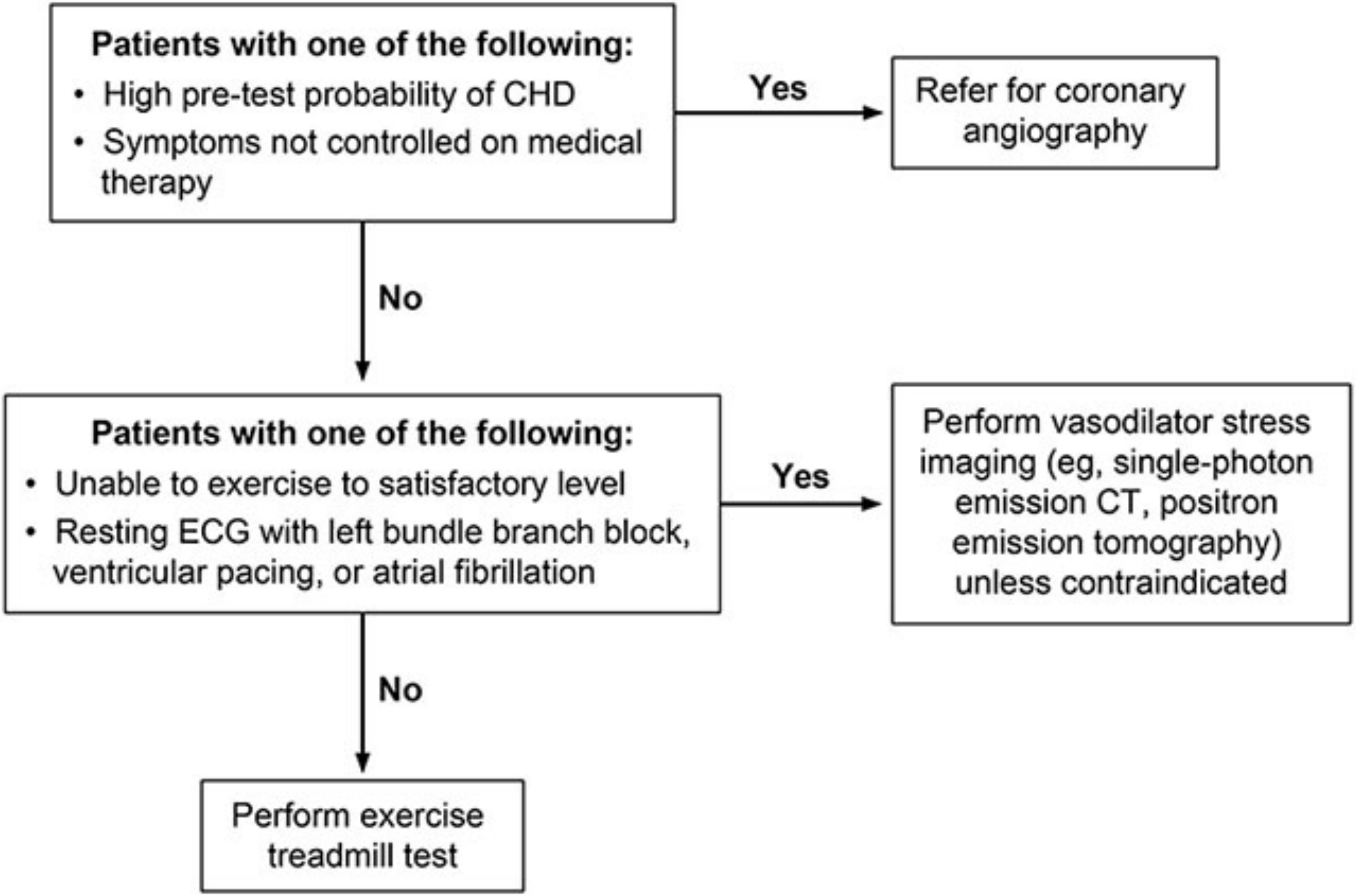
Immune thrombocytopenia

Clinical presentation		• Antecedent viral infection • Asymptomatic petechiae & ecchymosis most common • Mucocutaneous bleeding (eg, epistaxis, hematuria, gastrointestinal bleeding)
Laboratory findings		• Isolated thrombocytopenia <100,000/µL • Peripheral smear with megakaryocytes and no other abnormalities
Treatment	**Children**	• Skin manifestations only: Observe • Bleeding ∘ IVIg OR ∘ Glucocorticoids
	Adults	• Platelets ≥30,000/µL without bleeding: Observe • Platelets <30,000/µL OR bleeding: ∘ IVIg OR ∘ Glucocorticoids

main differential diagnosis in this patient is streptococcal versus viral pharyngitis. The Centor criteria, used
redict the likelihood of streptococcal pharyngitis, include:

1) tonsillar exudates
2) tender anterior cervical lymphadenopathy
3) fever
4) absence of cough

Diagnostic evaluation of stable angina

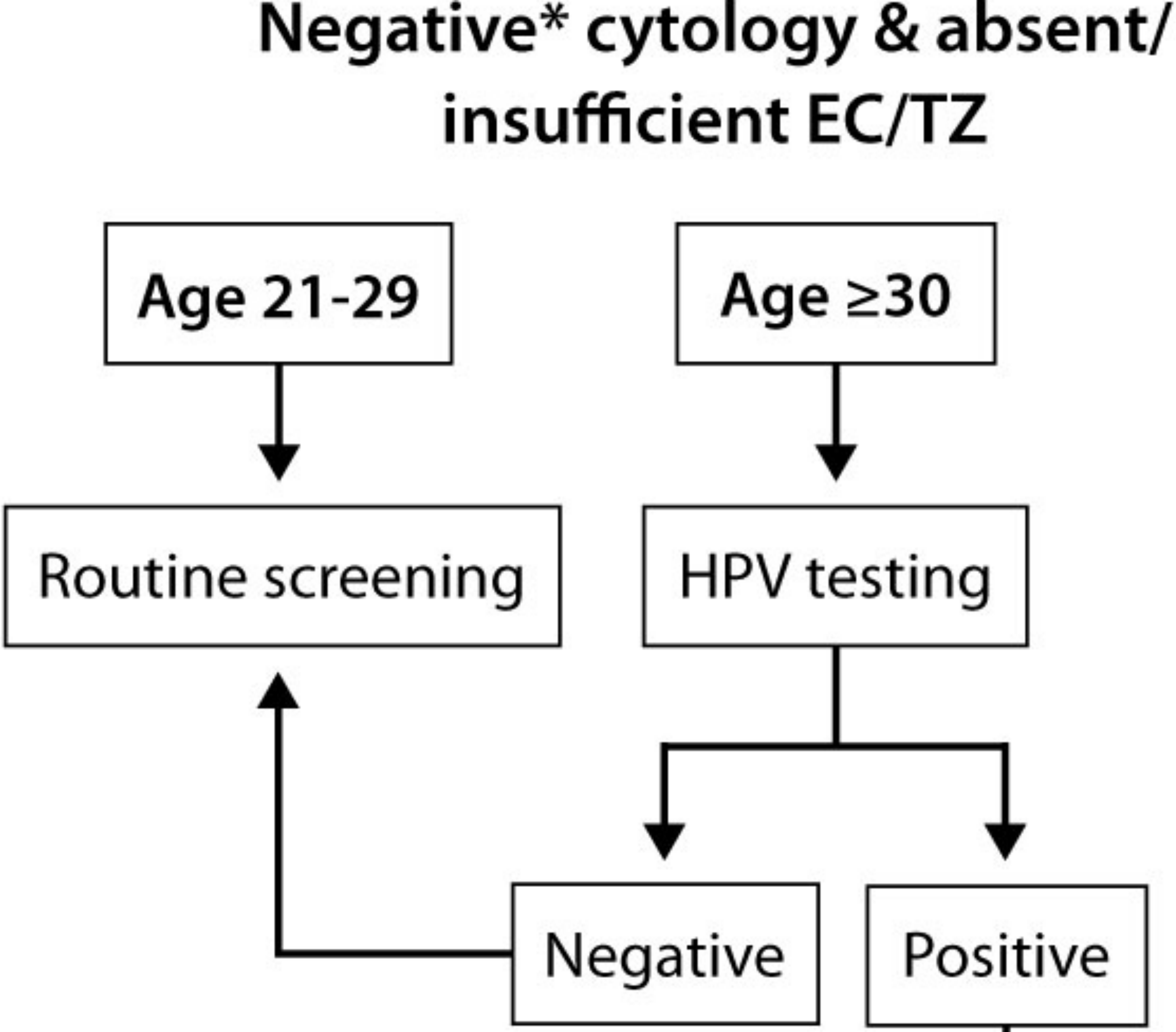

Patients with one of the following:
• High pre-test probability of CHD
• Symptoms not controlled on medical therapy
Yes
Refer for coronary angiography
No
Patients with one of the following:
• Unable to exercise to satisfactory level
• Resting ECG with left bundle branch block, ventricular pacing, or atrial fibrillation
Yes
Perform vasodilator stress imaging (eg, single-photon emission CT, positron emission tomography) unless contraindicated
No
Perform exercise treadmill test

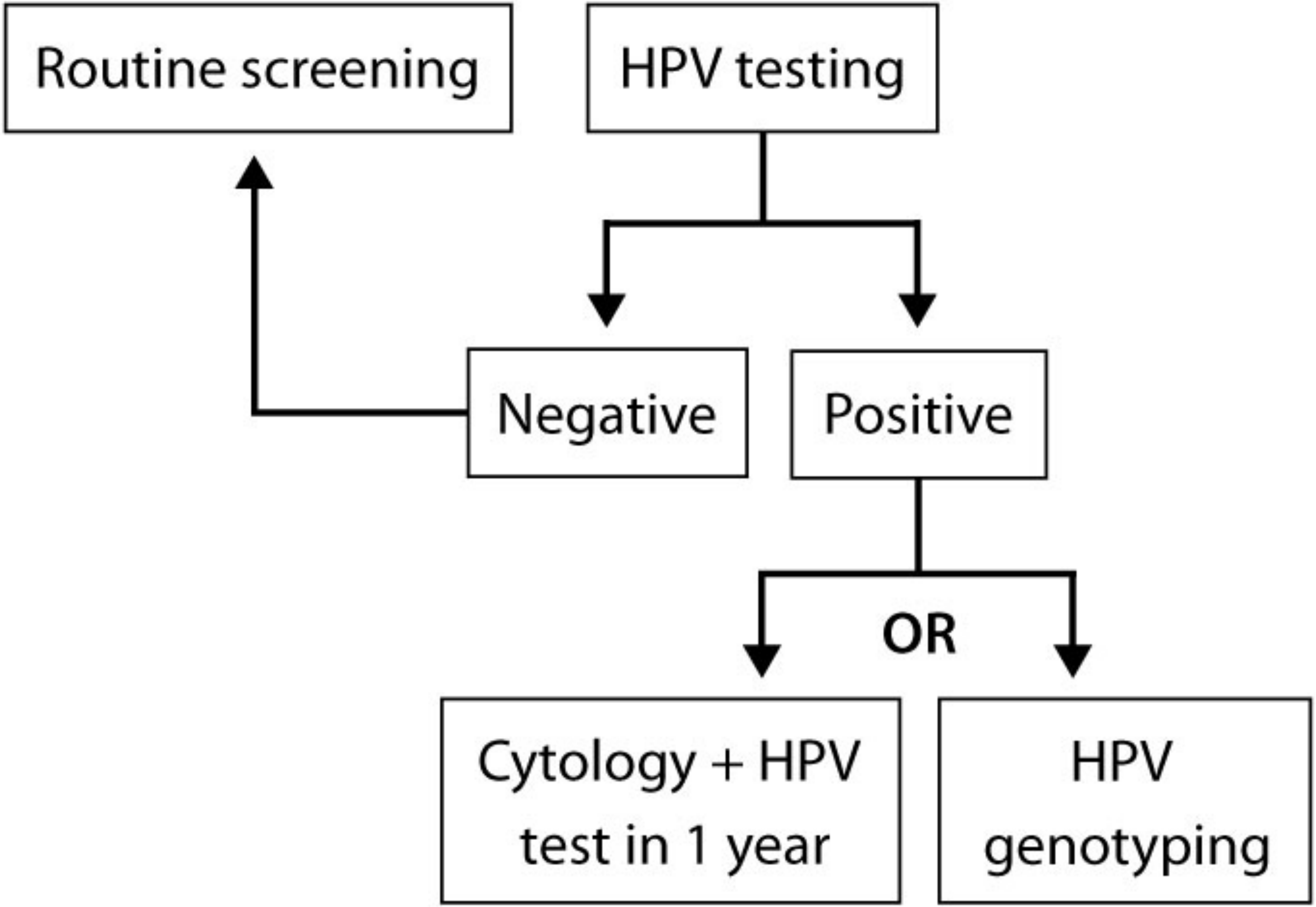
Polymyalgia rheumatica

Clinical features	Findings
Symptoms	• Age >50 • Bilateral pain & morning stiffness >1 month • Involvement of 2 of following: ○ Neck or torso ○ Shoulders or proximal arms ○ Proximal thigh or hip ○ Constitutional (fever, malaise, weight loss)
Physical examination	• Decreased active ROM in shoulders, neck & hips
Laboratory studies	• ESR >40 mm/h, sometimes >100 mm/h • Elevated CRP • Normocytic anemia possible • ~20% can have normal studies
Treatment	Response to glucocorticoids

Radial head subluxation (nursemaid’s elbow)

Mechanism	• **Axial traction** on forearm with elbow extended (child pulled, lifted, or swung by arm)
Physical examination findings	• Arm held **extended & pronated** • No swelling, deformity, or focal tenderness
Treatment	• Supination of forearm & flexion of elbow **OR** • **Hyperpronation** of forearm

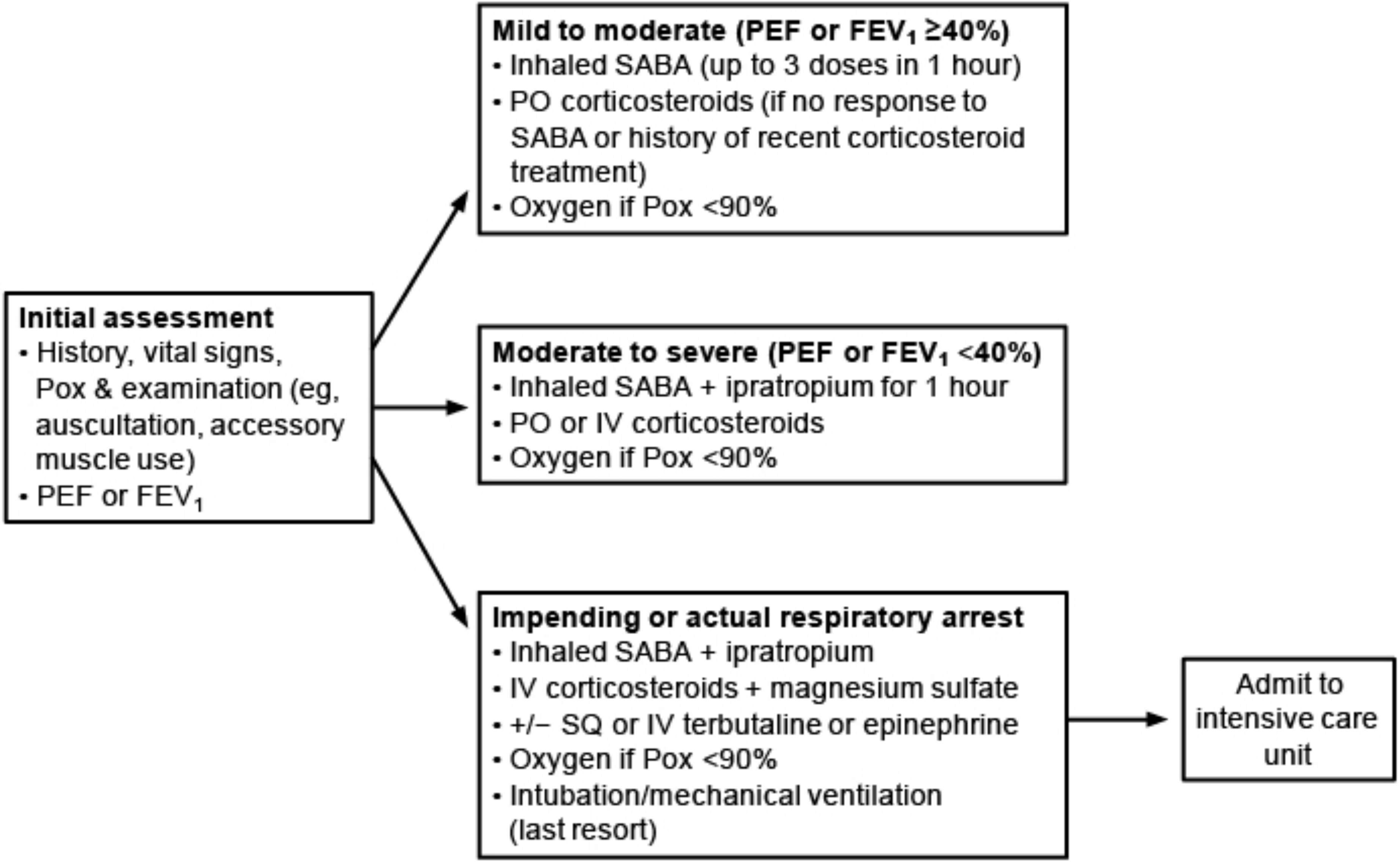

Negative* cytology & absent/ insufficient EC/TZ
Age 21-29
Age ≥30
Routine screening
HPV testing
Negative
Positive


Routine screening
HPV testing
Negative
Positive
OR
Cytology + HPV test in 1 year
HPV genotyping

Current guidelines for evaluation of patients with cytology that is negative for intraepithelial lesions with an absent or insufficient endocervical cells/transformation zone are as follows:

- For women age 21-29, routine screening with cytology every 3 years is recommended (no human papilloma virus [HPV] DNA testing).
- For women age ≥30, HPV DNA testing is performed. Further testing is based on the results of the HPV test.

Emergency department management of asthma exacerbation



Initial assessment
- History, vital signs, Pox & examination (eg, auscultation, accessory muscle use)
- PEF or FEV_1

Mild to moderate (PEF or $FEV_1 \geq 40\%$)
- Inhaled SABA (up to 3 doses in 1 hour)
- PO corticosteroids (if no response to SABA or history of recent corticosteroid treatment)
- Oxygen if Pox <90%

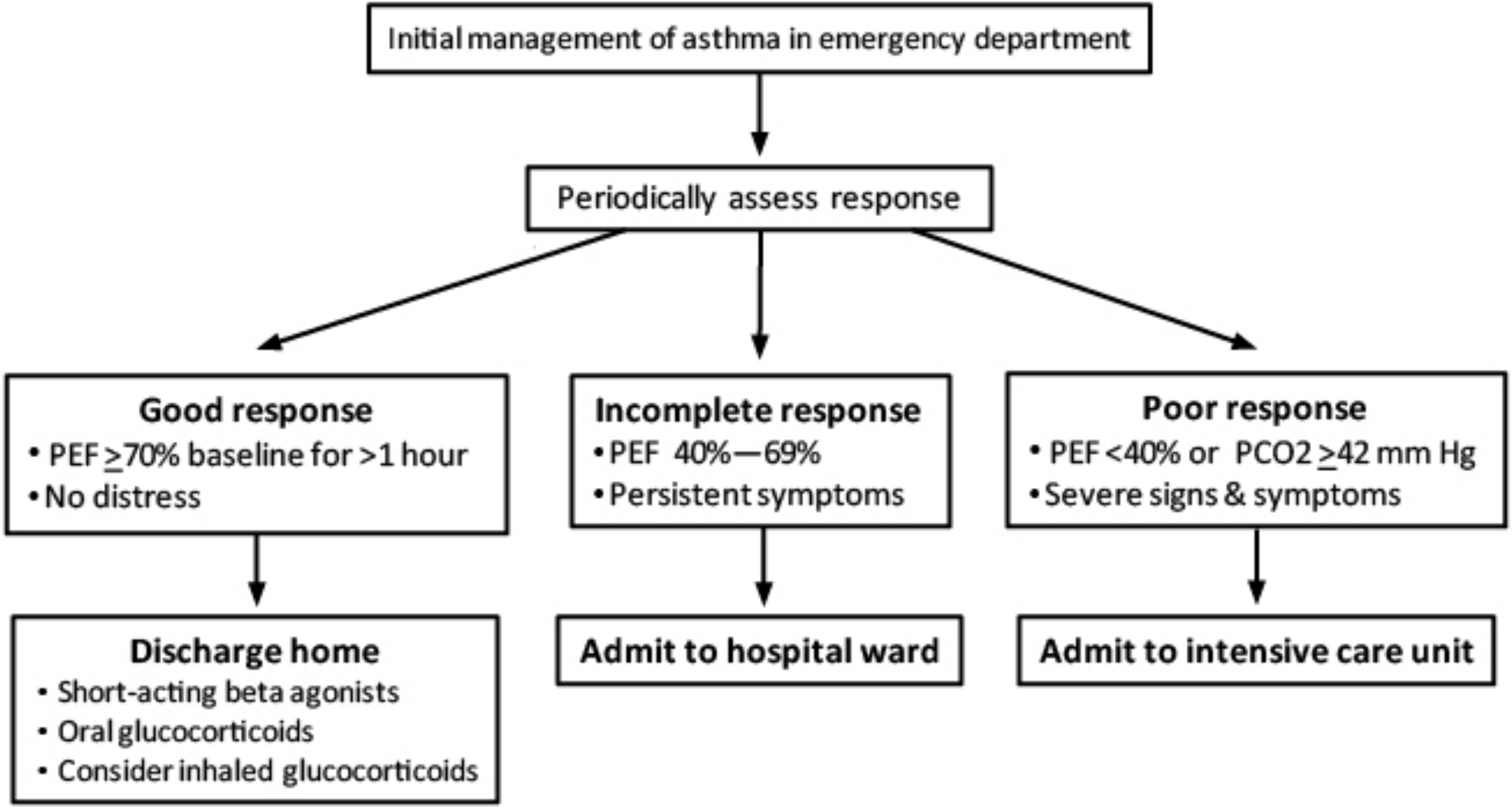
Moderate to severe (PEF or $FEV_1 < 40\%$)
- Inhaled SABA + ipratropium for 1 hour
- PO or IV corticosteroids
- Oxygen if Pox <90%

Impending or actual respiratory arrest
- Inhaled SABA + ipratropium
- IV corticosteroids + magnesium sulfate
- +/− SQ or IV terbutaline or epinephrine
- Oxygen if Pox <90%
- Intubation/mechanical ventilation (last resort)

Admit to intensive care unit

FEV_1 = forced expiratory volume in 1 second; **IV** = intravenous; **PEF** = peak expiratory flow; **PO** = oral;

Admission vs discharge in asthma exacerbation



Initial management of asthma in emergency department

Periodically assess response

Good response
- PEF ≥70% baseline for >1 hour
- No distress

Discharge home
- Short-acting beta agonists
- Oral glucocorticoids
- Consider inhaled glucocorticoids

Incomplete response
- PEF 40%—69%
- Persistent symptoms

Admit to hospital ward

Poor response
- PEF <40% or PCO2 ≥42 mm Hg
- Severe signs & symptoms

Admit to intensive care unit

responsible for the majority of morbidity and mortality seen in status asthmaticus. Clues to clinical deterioration include:

- Accessory muscle use with suprasternal retractions
- Cyanosis
- Diaphoresis
- Exhaustion or extreme fatigue
- Marked tachycardia
- Pulsus paradoxus
- $PaCO_2 \geq 42$ mm Hg
- Peak expiratory flow (PEF) <25% of baseline

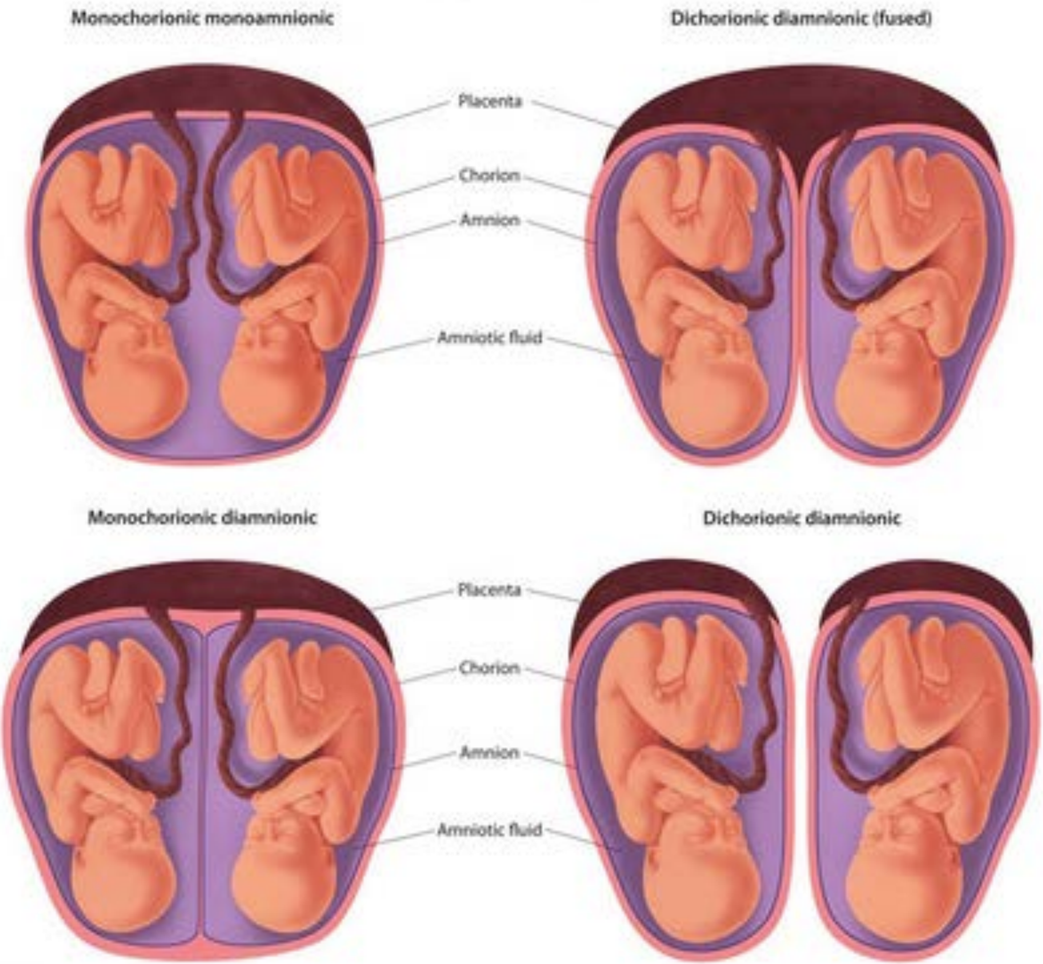
These patients should be assessed immediately for impending respiratory failure. Ventilatory support should be considered early in the course of the disease. Signs of impending respiratory failure include:

- Confusion and drowsiness
- Depressed respiratory drive
- Severe hypoxemia

Treatment-resistant depression

Nonresponder – consider switching	Partial responder – consider augmentation
• Monotherapy with a different antidepressant • Psychotherapy • Electroconvulsive therapy • Repetitive transcranial magnetic stimulation	• Augmentation agents: ◦ Second-generation antipsychotic ◦ Antidepressant with different mechanism of action ◦ Lithium ◦ Thyroid hormone ◦ Psychotherapy

Various types of twin placentation



Monochorionic monoamnionic
Dichorionic diamnionic (fused)
Placenta
Chorion
Amnion
Amniotic fluid
Monochorionic diamnionic
Dichorionic diamnionic
Placenta
Chorion
Amnion
Amniotic fluid

Delivery mode for diamniotic twin gestation

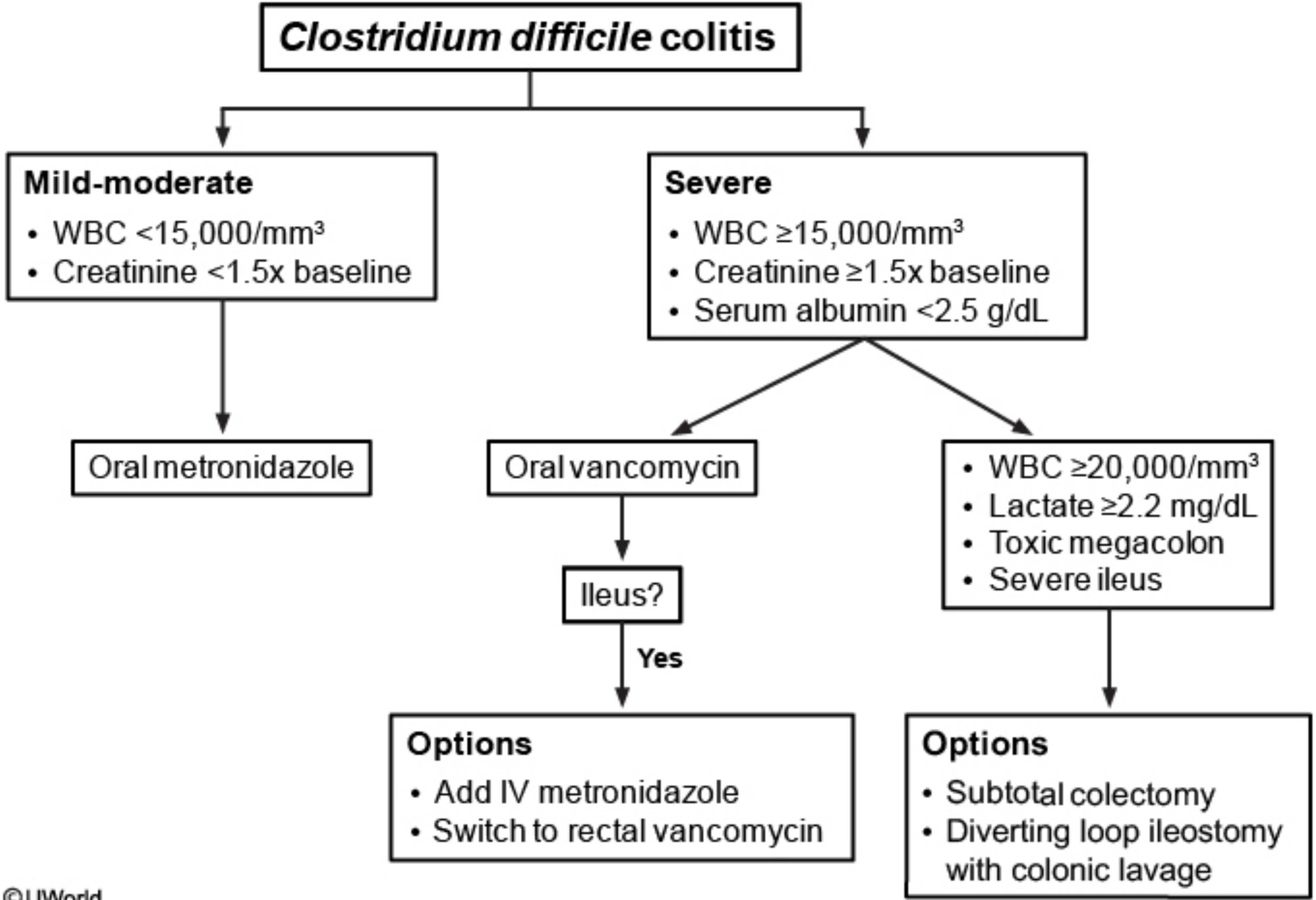
Presentation	**Mode of delivery**
Vertex/vertex	Vaginal
Vertex/breech	Vaginal* or cesarean based on physician's experience/comfort with breech extraction
Breech/vertex or breech/breech	Cesarean

*A cesarean delivery is recommended if the estimated weight of the non-presenting twin is <1500 g (3 lb 5 oz) or ≥20% the estimated fetal weight of the presenting twin.

hydrogen peroxide-producing lactobacilli. BV is diagnosed when 3 of the following criteria are present:

- Homogeneous vaginal discharge
- Vaginal pH >4.5
- Amine odor with application of potassium hydroxide (KOH)
- Presence of clue cells on microscopic examination of a wet mount

Bacterial vaginosis	
Clinical features	• Thin off-white discharge with fishy odor • No vaginal inflammation
Laboratory findings	• pH >4.5 • Clue cells • Positive whiff test (amine odor with KOH)
Treatment	Metronidazole or clindamycin
Complications	• ↑Risk of preterm birth • ↑Risk for acquisition of HIV, herpes simplex virus type 2, gonorrhea, chlamydia & trichomonas infections


Clostridium difficile colitis
Mild-moderate
• WBC <15,000/mm^3
• Creatinine <1.5x baseline
Severe
• WBC ≥15,000/mm^3
• Creatinine ≥1.5x baseline
• Serum albumin <2.5 g/dL
Oral metronidazole
Oral vancomycin
Ileus?
Yes
• WBC ≥20,000/mm^3
• Lactate ≥2.2 mg/dL
• Toxic megacolon
• Severe ileus
Options
• Add IV metronidazole
• Switch to rectal vancomycin
Options
• Subtotal colectomy
• Diverting loop ileostomy with colonic lavage

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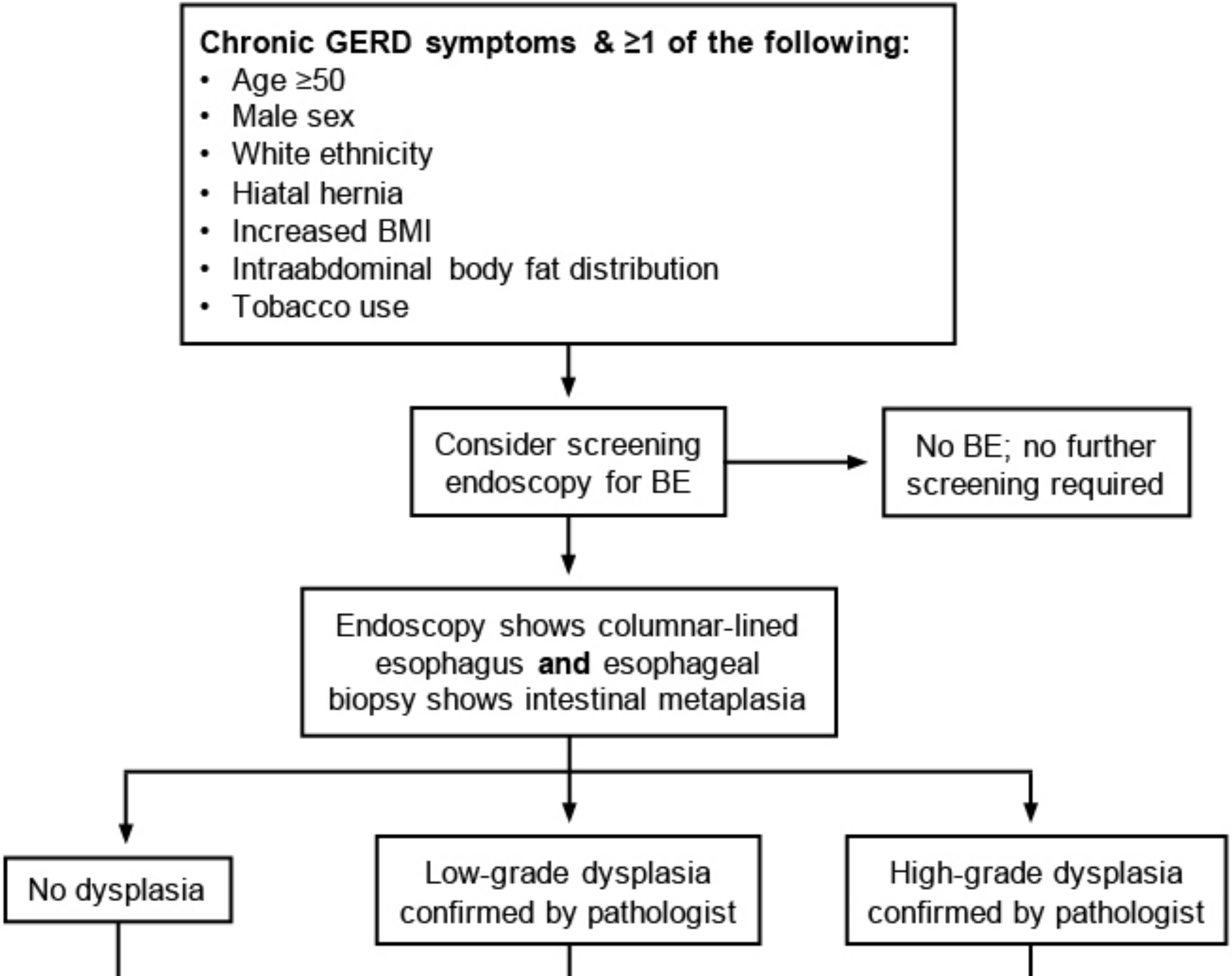
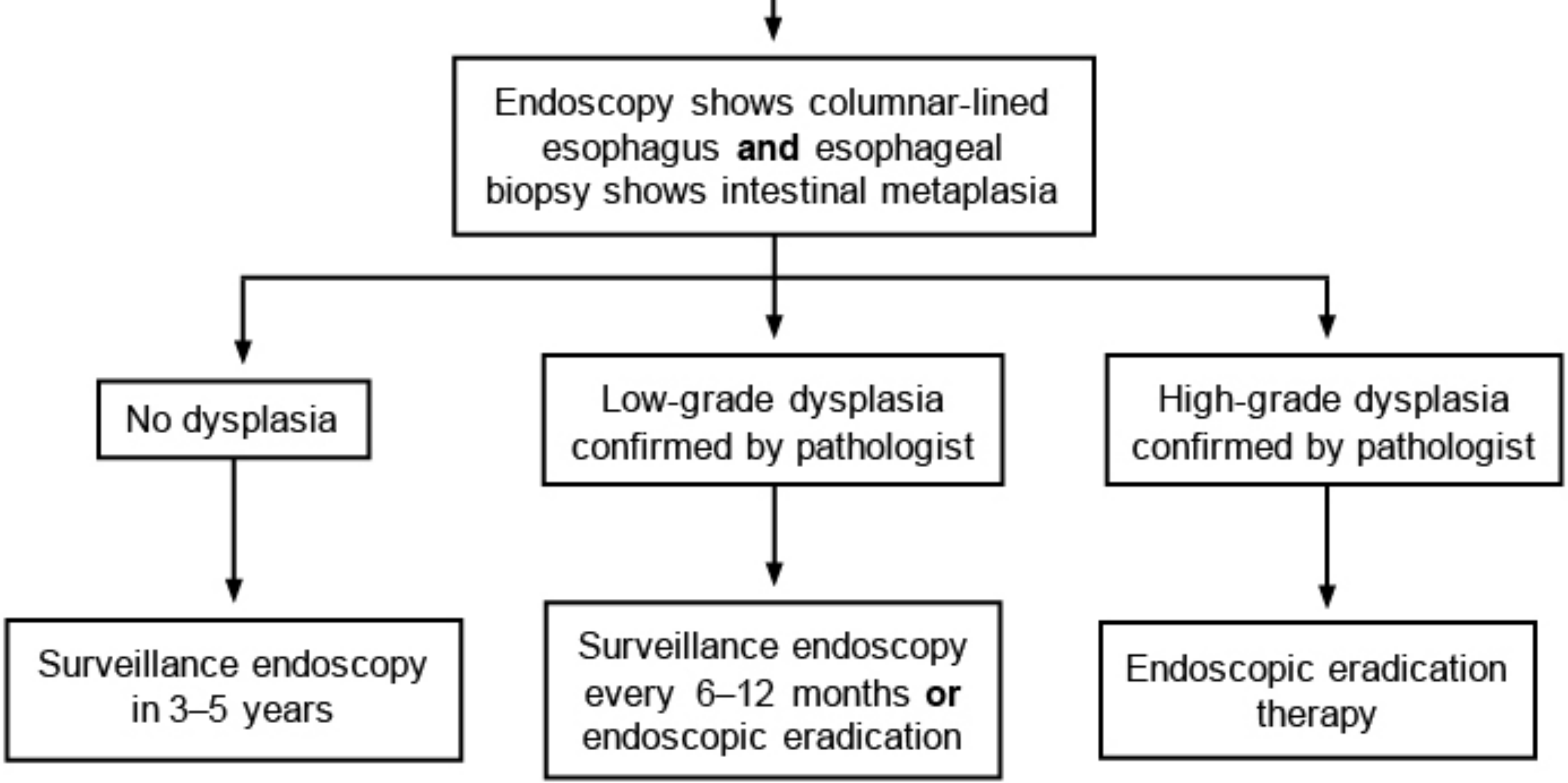
<table>
<tr><th colspan="2">Treatment of recurrent <i>Clostridium difficile</i> infection</th></tr>
<tr><td>First recurrence</td><td>• Metronidazole for non-severe illness
• Vancomycin for severe illness</td></tr>
<tr><td>Second recurrence</td><td>• Pulsed tapering oral vancomycin for 6-7 weeks</td></tr>
<tr><td>Subsequent relapses</td><td>• Fidaxomicin
• Consider fecal microbiota transplant</td></tr>
</table>

Evaluation & management of Barrett's esophagus


Chronic GERD symptoms & ≥1 of the following:
• Age ≥50
• Male sex
• White ethnicity
• Hiatal hernia
• Increased BMI
• Intraabdominal body fat distribution
• Tobacco use
Consider screening endoscopy for BE
No BE; no further screening required
Endoscopy shows columnar-lined esophagus **and** esophageal biopsy shows intestinal metaplasia
No dysplasia
Low-grade dysplasia confirmed by pathologist
High-grade dysplasia confirmed by pathologist


Endoscopy shows columnar-lined esophagus **and** esophageal biopsy shows intestinal metaplasia
No dysplasia
Low-grade dysplasia confirmed by pathologist
High-grade dysplasia confirmed by pathologist
Surveillance endoscopy in 3–5 years
Surveillance endoscopy every 6–12 months **or** endoscopic eradication
Endoscopic eradication therapy

GERD = gastroesophageal reflux disease, **BE** = Barrett's esophagus.

Test	Interpretation
A_{1c}	• Preferred test in nonfasting state • ≥6.5% = Diabetes mellitus • 5.7-6.4% = Increased risk for diabetes • <5.7% = Normal
Fasting blood glucose	• No caloric intake for >8 hours • **≥126 mg/dL** = Diabetes mellitus • 100-125 mg/dL = Increased risk for diabetes • <100 mg/dL = Normal
Random glucose levels	• **≥200 mg/dL** with symptoms of hyperglycemia = Diabetes mellitus • 140-199 mg/dL = Increased risk for diabetes • <140 mg/dL = Normal
Oral glucose tolerance test	• Most sensitive test • 75 g glucose load with glucose testing for 2 hours • **≥200 mg/dL** = Diabetes mellitus • 140-199 mg/dL= Increased risk for diabetes • <140 mg/dL = Normal
• Testing may be repeated in cases of discordant or equivocal results • If a patient is asymptomatic, a positive test should be reconfirmed with the same test on a different day	

Acute bacterial rhinosinusitis	
Symptoms	• Fever • Nasal congestion/obstruction • Purulent nasal discharge • Maxillary tooth discomfort • Facial pain/pressure worsens with bending forward
Diagnostic criteria	**Diagnosis requires any of the following:** • Persistent symptoms ≥10 days without improvement • Severe symptoms, high fever (>39 C [102 F]), purulent nasal discharge or facial pain ≥3 days • Worsening symptoms ≥5 days after an initially improving viral upper respiratory infection
Treatment	• **First-line therapy:** Amoxicillin-clavulanate • **Alternate agent:** Doxycycline or fluoroquinolones • **Supportive care:** Analgesics, decongestants, saline irrigation, topical glucocorticoids • **Not recommended due to resistance:** Amoxicillin, macrolides, trimethoprim-sulfamethoxazole, 2nd or 3rd generation cephalosporins

1. Specific antituberculous therapy should be initiated early in all patients with clinically suspected tuberculous meningitis.
2. Infants and children with tuberculous meningitis, miliary TB, and tuberculous osteomyelitis should receive 12 months of antituberculous therapy.

Urinary tract infection		
Microbiology	*E coli* most common cause	
Clinical features	**Cystitis**	Dysuria, frequency, urgency, hematuria, suprapubic pain
	Pyelonephritis	Fever >38 C (100.4 F), chills, flank pain, costovertebral angle tenderness & nausea/vomiting, +/− cystitis symptoms
Diagnosis	Urinalysis & urine culture	
Treatment	Antibiotics	

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Constipation in children	
Risk factors	• Initiation of solid food & cow’s milk • Toilet training • School entry
Clinical presentation	• Straining with passage of hard stools • Crampy abdominal pain • ≤2 defecations/week
Complications	• Anal fissures • Hemorrhoids • Encopresis • Enuresis/urinary tract infections • Vomiting
Treatment	• Increase dietary fiber • Limit cow’s milk intake to <24 oz • Laxative • +/- Suppositories, enema

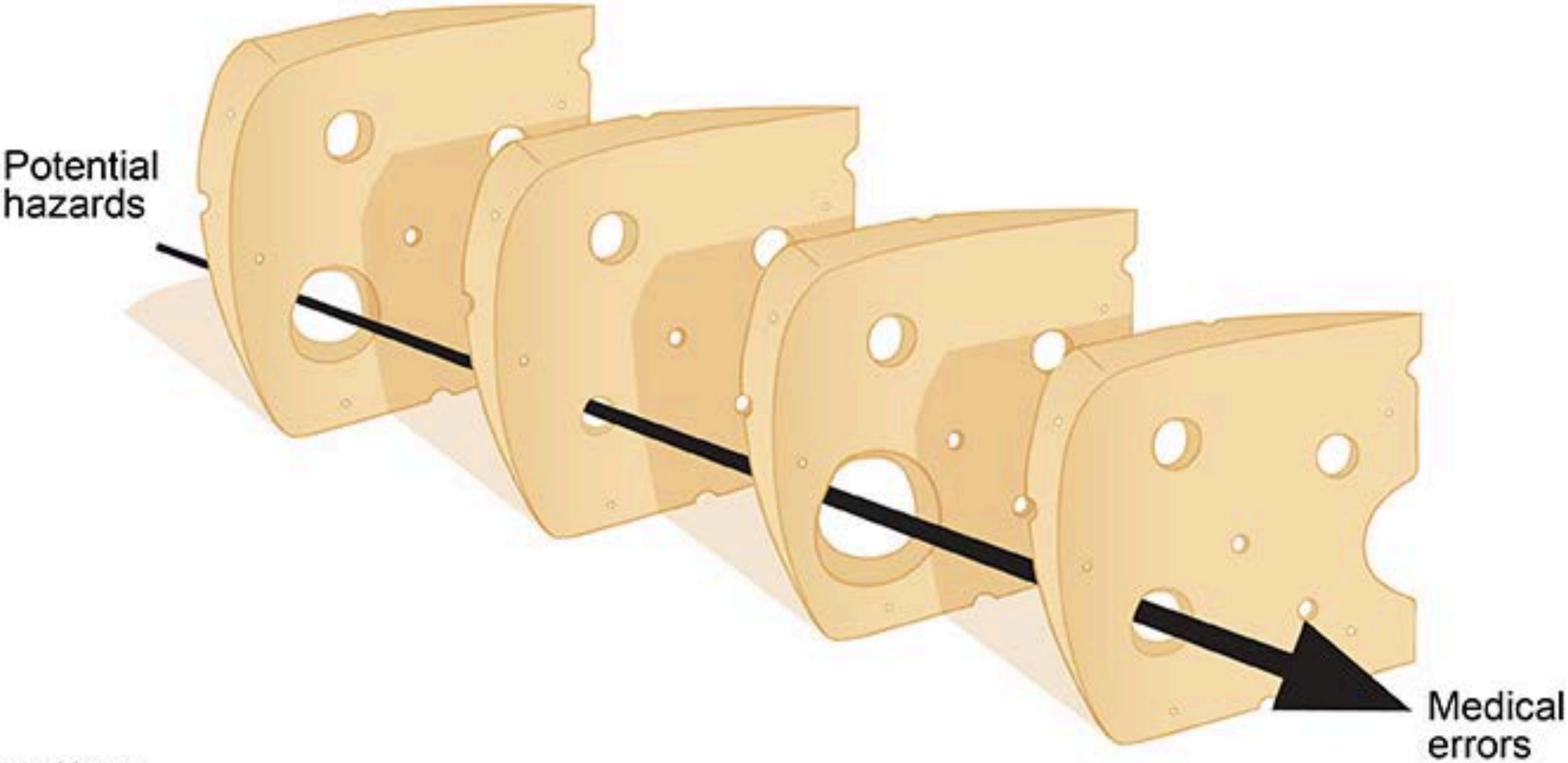
Post-traumatic stress disorder	
DSM-5	• Exposure to life-threatening trauma • **Intrusion symptoms:** Nightmares, flashbacks • **Avoidance symptoms:** Avoids distressing thoughts, feelings & external reminders of the event • **Negative mood & cognitions:** Persistent horror, anger, guilt, negative beliefs about self & the world, decreased interest in activities, emotional detachment, amnesia for event • **Arousal symptoms:** Sleep disturbance, hypervigilance, impaired concentration • Duration: More than 1 month
Treatment	• Trauma-focused cognitive-behavioral therapy • Antidepressants (SSRIs, SNRIs) • Prazosin for nightmares

Root cause analysis

1. Collect data
2. Create causal factor flow chart
3. Identify root causes
4. Generate recommendations & implementation
5. Measure success of changes implemented

Asymptomatic bacteriuria	
Whom to treat	**Whom not to treat**
Pregnancy	Nonpregnant premenopausal woman
Urologic intervention	The elderly
Hip arthroplasty	Diabetics
	Patients with spinal cord injury
	Patients with chronic indwelling urinary catheters

Swiss cheese model


Potential hazards
Medical errors

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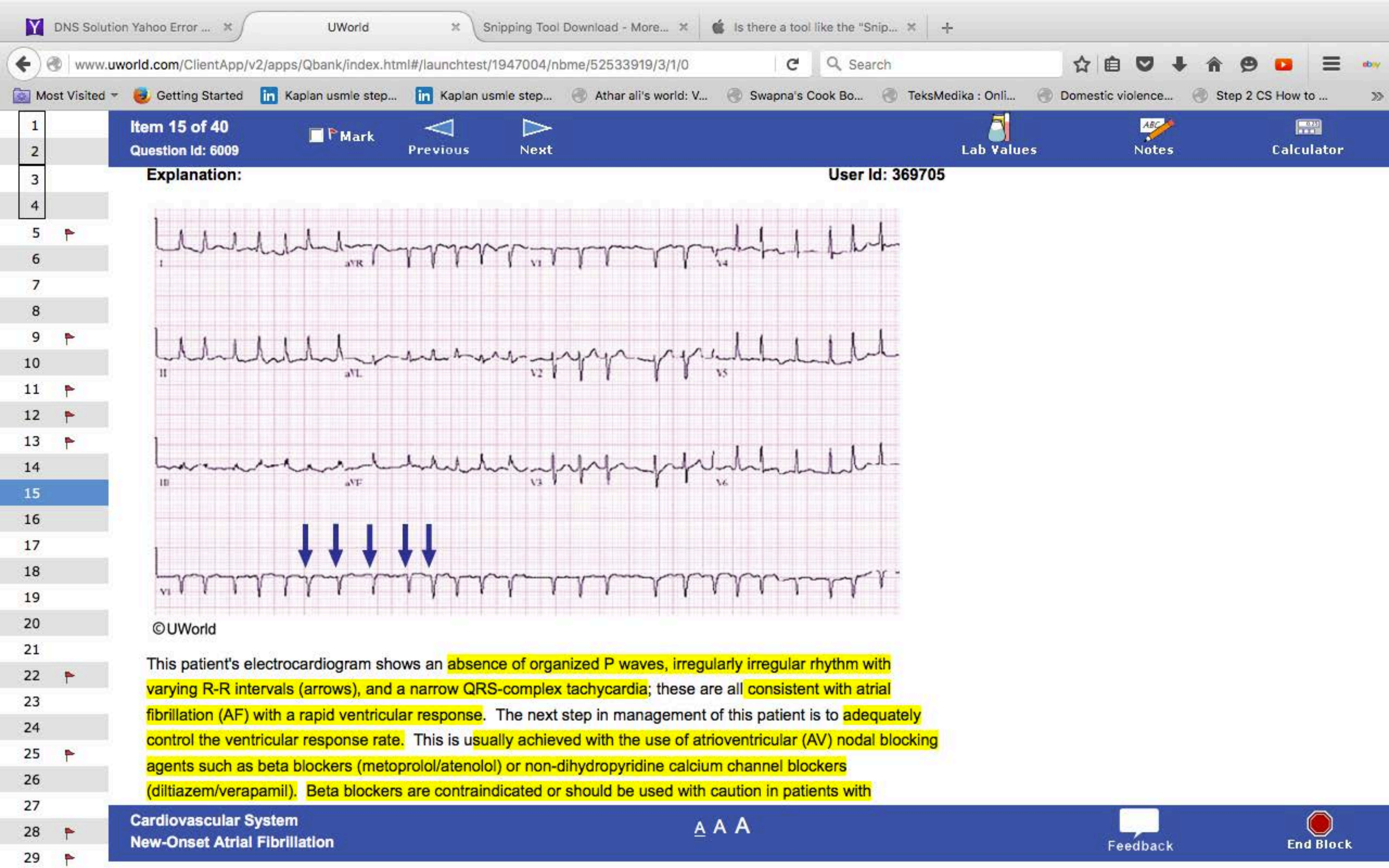
Management of chronic pancreatitis

Pain	• Alcohol & tobacco abstinence • Frequent, small meals • Pancreatic enzyme supplements • Nonsteroidal anti-inflammatory drugs • Opioids
Malabsorption	• Low-fat diet • **Pancreatic enzyme supplements** • Fat-soluble vitamin supplements
Diabetes	• Metformin • **Insulin**

Evaluation of nipple discharge

	Pathologic	Physiologic
Side	Unilateral, single duct	Bilateral, multiple ducts
Color	Bloody or serous	Milky, nonbloody
Palpable lump or skin changes	Yes	No
Evaluation	• Mammogram +/- ultrasound • Surgical evaluation	• Urine β-hCG • Serum TSH, prolactin

Contrast nephropathy	
Risk factors	• Age >75 • Reduced GFR • Reduced renal perfusion (eg, hypotension) • Increased contrast load
Prevention	• Maintain intravascular volume ○ Intravenous saline/sodium bicarbonate ○ Hold diuretics • Avoid nephrotoxins (eg, NSAIDs)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Kaplan usmle step...
Kaplan usmle step...
Athar ali's world: V...
Swapna's Cook Bo...
TeksMedika : Onli...
Domestic violence...
Step 2 CS How to ...
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24
25
26
27
28
29
Item 15 of 40
Question Id: 6009
Mark
Previous
Next
Lab Values
Notes
Calculator
I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6
V1
A A A
Feedback
End Block

Explanation:

User Id: 369705

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This patient's electrocardiogram shows an absence of organized P waves, irregularly irregular rhythm with varying R-R intervals (arrows), and a narrow QRS-complex tachycardia; these are all consistent with atrial fibrillation (AF) with a rapid ventricular response. The next step in management of this patient is to adequately control the ventricular response rate. This is usually achieved with the use of atrioventricular (AV) nodal blocking agents such as beta blockers (metoprolol/atenolol) or non-dihydropyridine calcium channel blockers (diltiazem/verapamil). Beta blockers are contraindicated or should be used with caution in patients with

Cardiovascular System
New-Onset Atrial Fibrillation

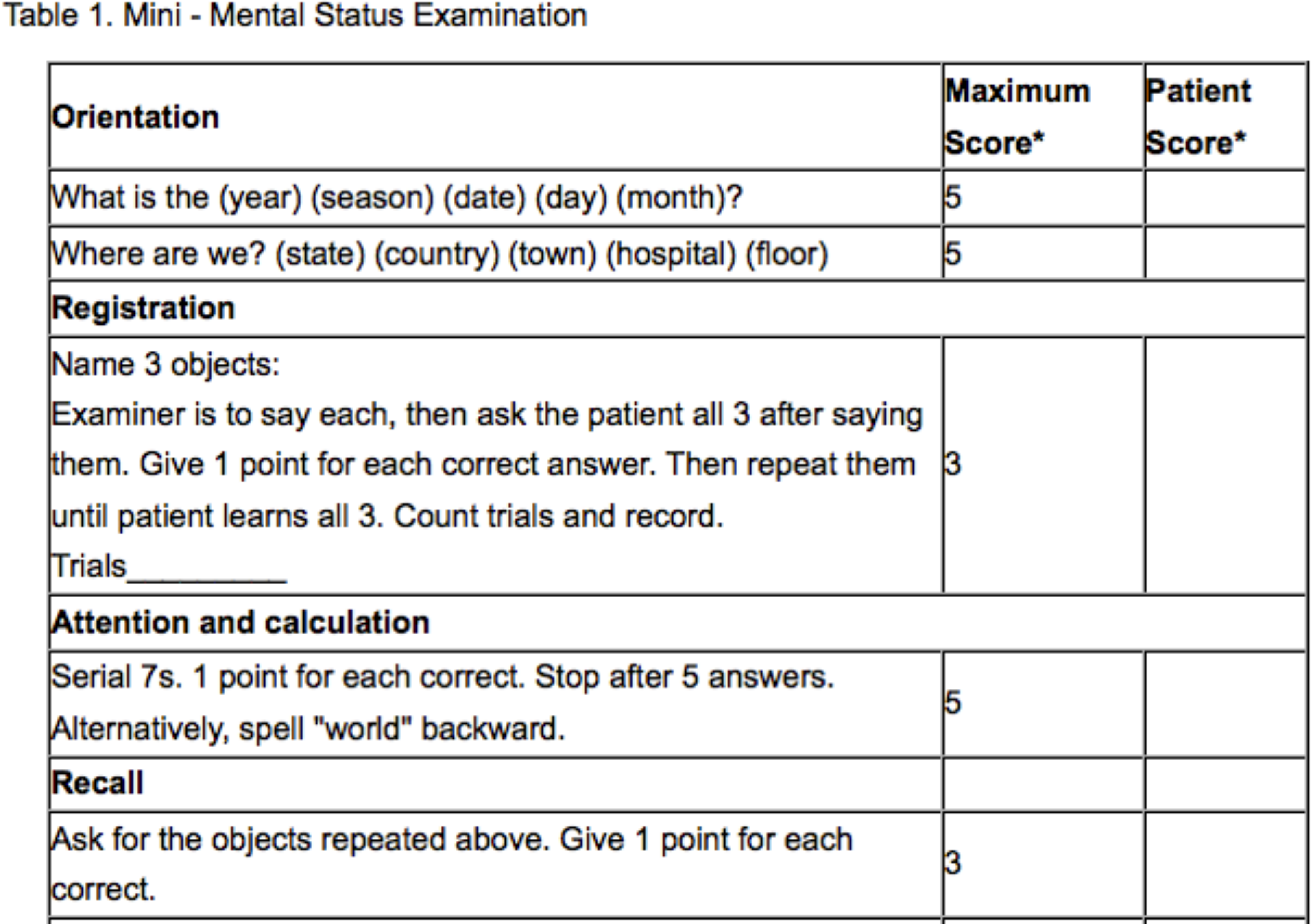


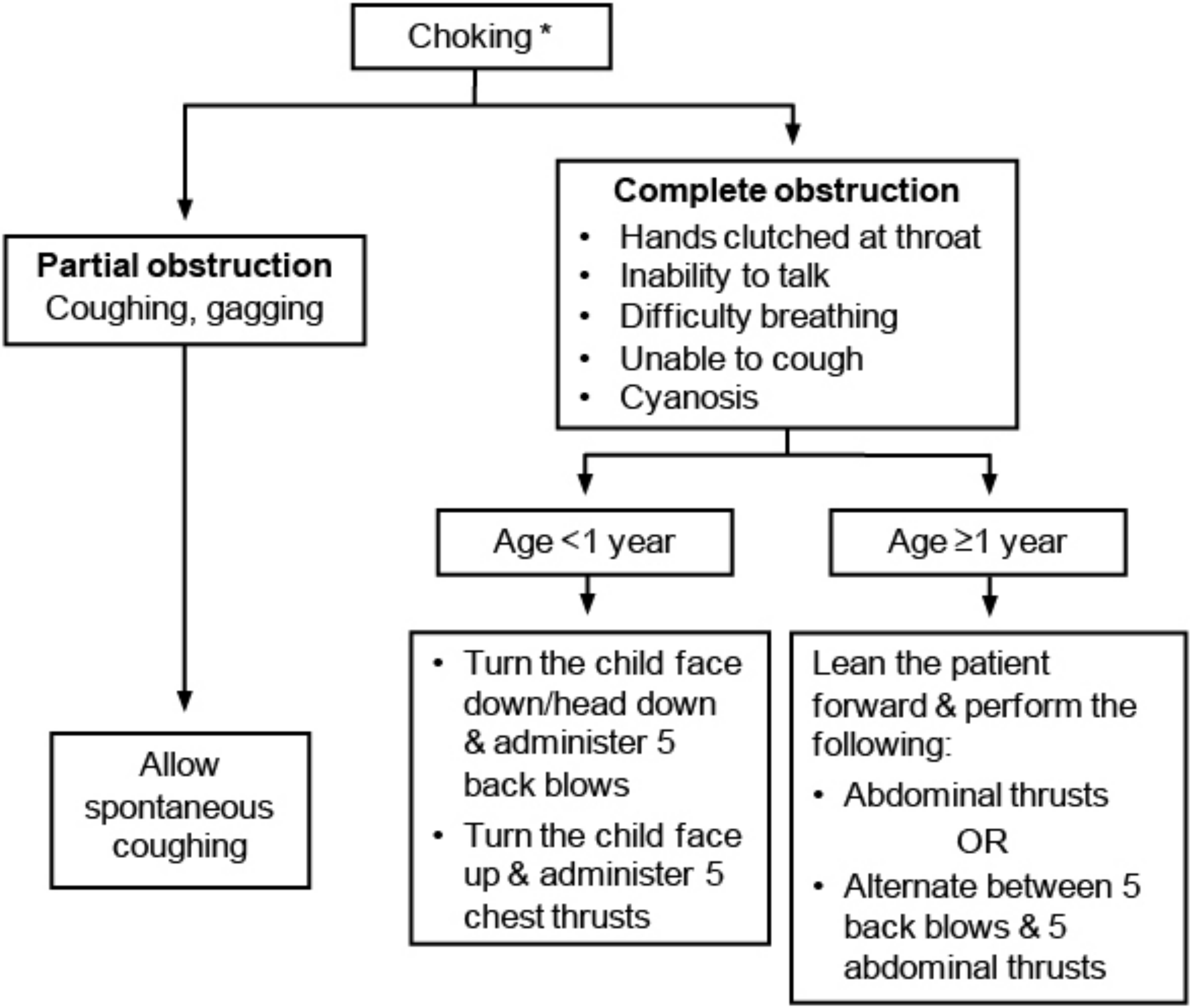
Table 1. Mini - Mental Status Examination

Orientation	**Maximum Score***	**Patient Score***
What is the (year) (season) (date) (day) (month)?	5	
Where are we? (state) (country) (town) (hospital) (floor)	5	
Registration		
Name 3 objects: Examiner is to say each, then ask the patient all 3 after saying them. Give 1 point for each correct answer. Then repeat them until patient learns all 3. Count trials and record. Trials__________	3	
Attention and calculation		
Serial 7s. 1 point for each correct. Stop after 5 answers. Alternatively, spell "world" backward.	5	
Recall		
Ask for the objects repeated above. Give 1 point for each correct.	3	

<table>
<tr><td colspan="4">Recall</td><td></td><td></td></tr>
<tr><td colspan="4">Ask for the objects repeated above. Give 1 point for each correct.</td><td>3</td><td></td></tr>
<tr><td colspan="4">Language</td><td></td><td></td></tr>
<tr><td colspan="4">Name a pencil and watch (2 points)
Repeat the following "No ifs, ands, or buts" (1 point)
Follow a 3-stage command:
"Take a paper in your right hand, fold it in half, and put it on the floor" (3 points)
Read and obey the following:
Close your eyes (1 point)
Write a sentence (1 point)
Copy design (1 point)</td><td>9</td><td></td></tr>
<tr><td colspan="4">Total score</td><td></td><td></td></tr>
<tr><td colspan="4">Assess level of consciousness along a continuum</td><td></td><td></td></tr>
<tr><td>Alert</td><td>Drowsy</td><td>Stupor</td><td>Coma</td><td></td><td></td></tr>
</table>

*A score < 20 is indicative of a dementia. Patients with the benign forgetfulness of senility generally score > 25.

Management of choking


Choking *
Partial obstruction
Coughing, gagging
Allow spontaneous coughing
Complete obstruction
Hands clutched at throat
Inability to talk
Difficulty breathing
Unable to cough
Cyanosis
Age <1 year
Age ≥1 year
Turn the child face down/head down & administer 5 back blows
Turn the child face up & administer 5 chest thrusts
Lean the patient forward & perform the following:
Abdominal thrusts
OR
Alternate between 5 back blows & 5 abdominal thrusts

*Perform CPR if the patient becomes unconscious

Human papillomavirus vaccine indications

- All girls & women* age 9-26
- Boys & men age 9-21 (up to age 26 for men who have sex with men)
- Immunocompromised individuals (including HIV patients) age 9-26
- **Not** indicated in pregnant women

* Including those with history of genital warts, abnormal cytology, or positive HPV DNA test.

Blunt testicular trauma	
Mild Minimal pain/swelling & normal physical examination	• No further testing or surgical consultation • Home with bed rest, ice packs, analgesics, supportive underwear (briefs) • Follow-up in 48 hours (earlier if symptoms worsen)
Moderate Moderate pain/swelling	• Ultrasound by experienced operator • If ultrasound normal: Treat as mild blunt testicular trauma • If ultrasound abnormal: Expert surgical consultation
Severe Severe pain/swelling or abnormal physical examination	• Ultrasound by experienced operator **AND** • Expert surgical consultation

Treatment options for latent tuberculosis infection

- **Isoniazid and rifapentine weekly for 3 months** under direct observation (not recommended in HIV patients)
- Isoniazid monotherapy for 6–9 months
- Rifampin for 4 months
- Isoniazid & rifampin for 4 months

*Pyridoxine is added to prevent neuropathies in patients who are taking isoniazid & have the following conditions: diabetes, uremia, alcoholism, malnutrition, HIV, pregnancy & epilepsy

Normal-pressure hydrocephalus	
Clinical features	• Gait instability (wide-based) with frequent falls • Cognitive dysfunction • Urinary urgency/incontinence (late feature) • Depressed affect (frontal lobe compression) • Upper motor neuron signs in lower extremities
Diagnosis	• Marked improvement in gait with spinal fluid removal - Miller (lumbar tap) test • Enlarged ventricles out of proportion to the underlying brain atrophy on MRI
Treatment	• Ventriculoperitoneal shunting

Indications for voiding cystourethrogram

- Atypical or complex clinical presentation
- Recurrence of febrile UTI
- Renal & bladder ultrasound shows:
  - Hydronephrosis
  - Renal scarring
  - High-grade vesicoureteral reflux OR
  - Obstructive uropathy

Perioperative medication management

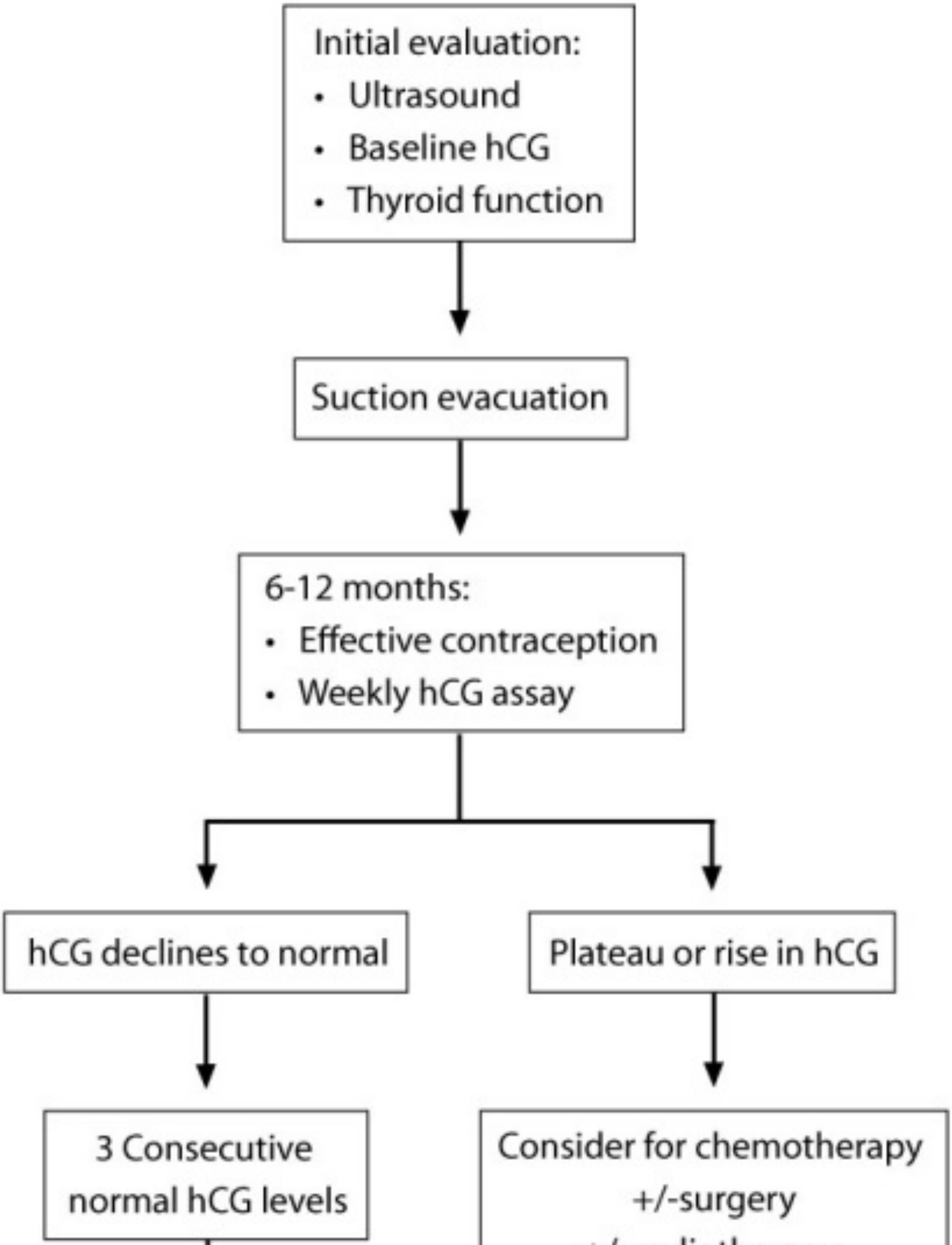
Drug class	Clinical considerations	Preoperative management
Beta blockers	Withdrawal can cause hypertension	Continue during surgery
Alpha 2 agonists (eg, clonidine)	Withdrawal can cause hypertension	Continue during surgery
Calcium channel blockers	Slightly increased risk of bleeding	Continue during surgery
ACE inhibitors	Possible hypotension	Continue during surgery for patients with heart failure
		Hold the night before surgery for other patients
Diuretics	Possible hypovolemia & hypotension	Continue up to day of surgery & hold that morning
Statins	Slight risk of myopathy	Continue during surgery

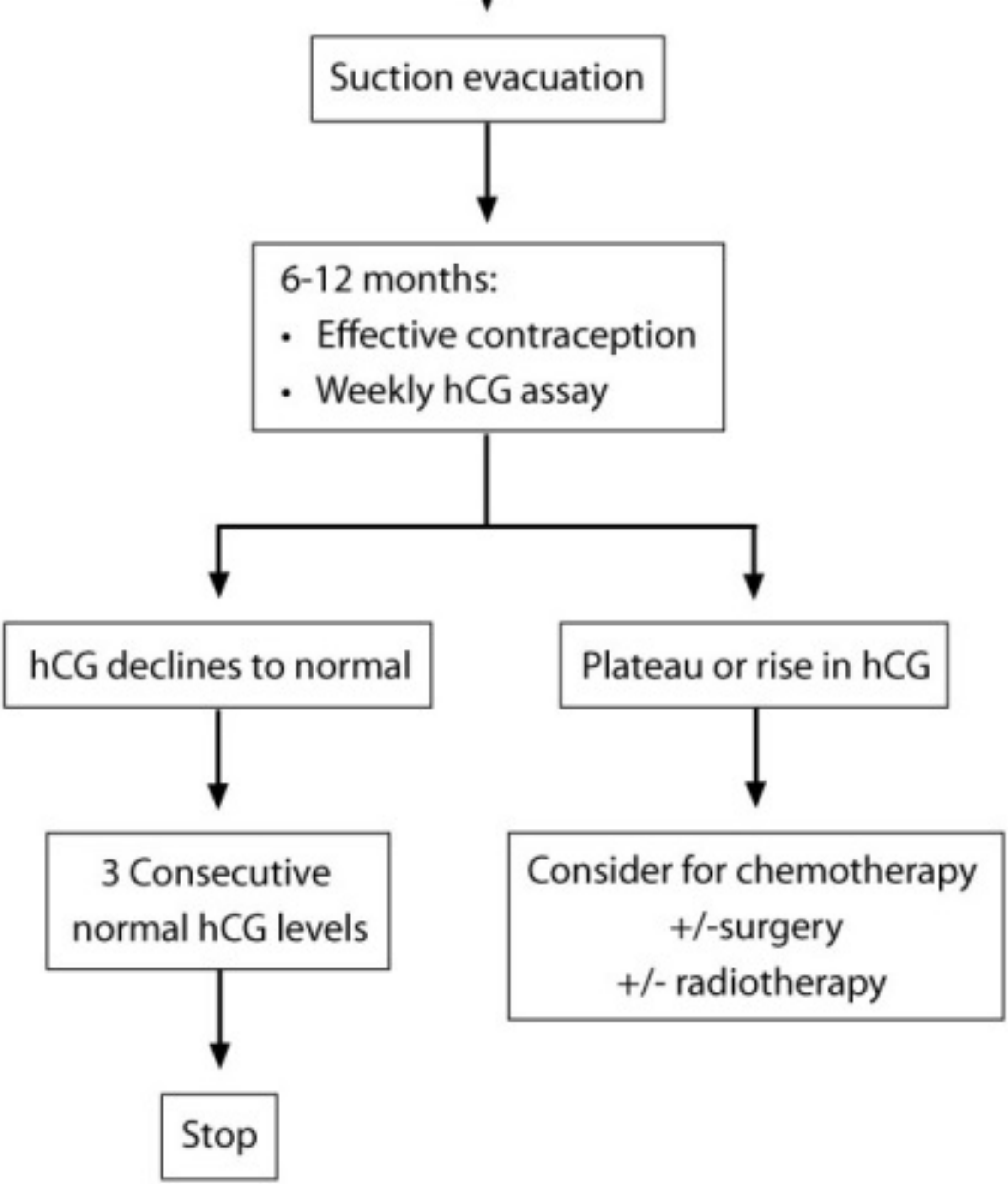
Coronary revascularization is indicated primarily for 2 groups of patients with stable angina:

- Patients with **refractory angina** despite maximal medical therapy
- Patients in whom revascularization will improve **long-term survival.** This includes those with **left main coronary stenosis** and those with **multivessel CAD** (especially involving the **proximal LAD**) along with left ventricular systolic dysfunction.

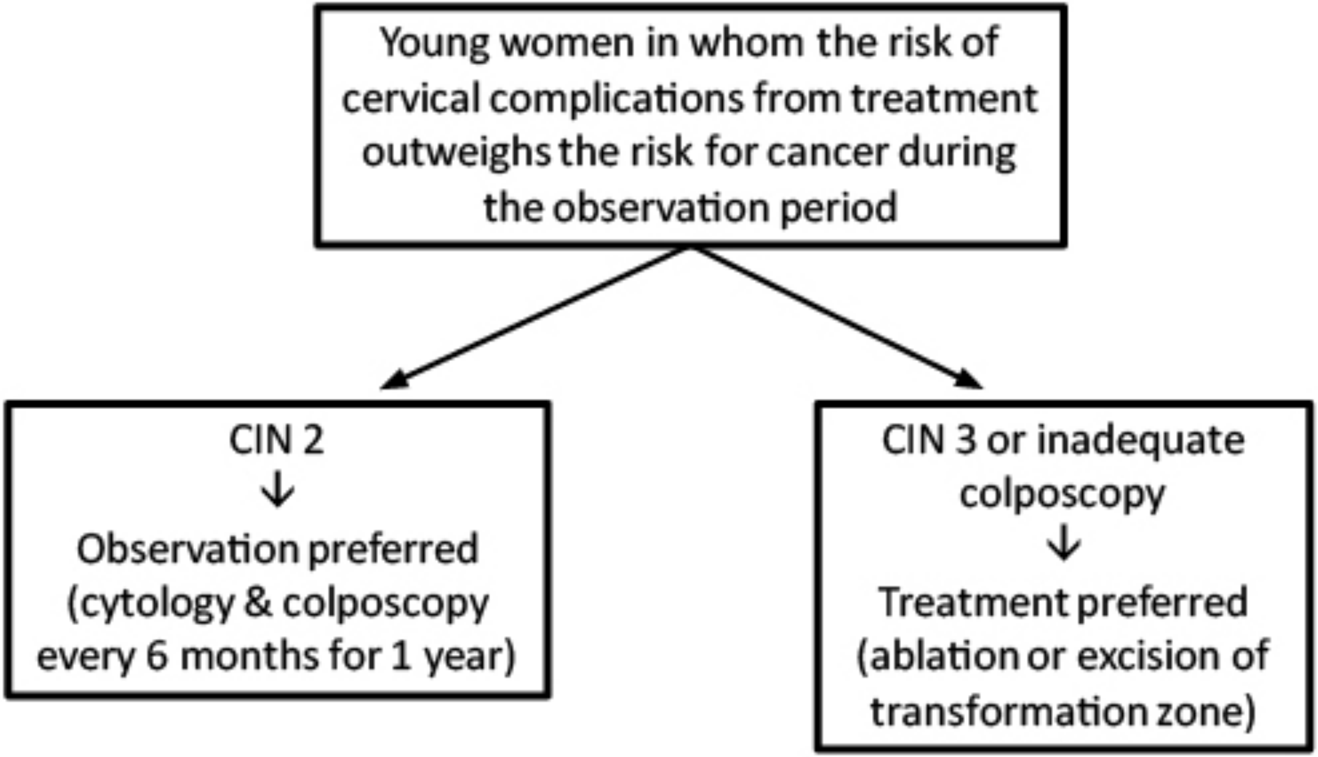
Intervals for follow-up colonoscopy after polypectomy	
Small rectal hyperplastic polyps	10 years
1 or 2 small (<1 cm) tubular adenomas	5 years
▪ 3-10 adenomas ▪ Any adenoma >1 cm ▪ Adenoma with high-grade dysplasia or **villous** features	3 years
More than 10 adenomas	<3 years Consider underlying familial syndrome
▪ Large (>2 cm) sessile polyp removed by piecemeal excision ▪ Polyp with adenocarcinoma (must have minimal invasion & ≥2 mm margin)	2-6 months 2-3 months

Management of molar pregnancy


Initial evaluation:
• Ultrasound
• Baseline hCG
• Thyroid function
Suction evacuation
6-12 months:
• Effective contraception
• Weekly hCG assay
hCG declines to normal
Plateau or rise in hCG
3 Consecutive normal hCG levels
Consider for chemotherapy
+/-surgery


Suction evacuation
6-12 months:
• Effective contraception
• Weekly hCG assay
hCG declines to normal
Plateau or rise in hCG
3 Consecutive normal hCG levels
Consider for chemotherapy +/-surgery +/- radiotherapy
Stop

Management of high-grade cervical intraepithelial neoplasia

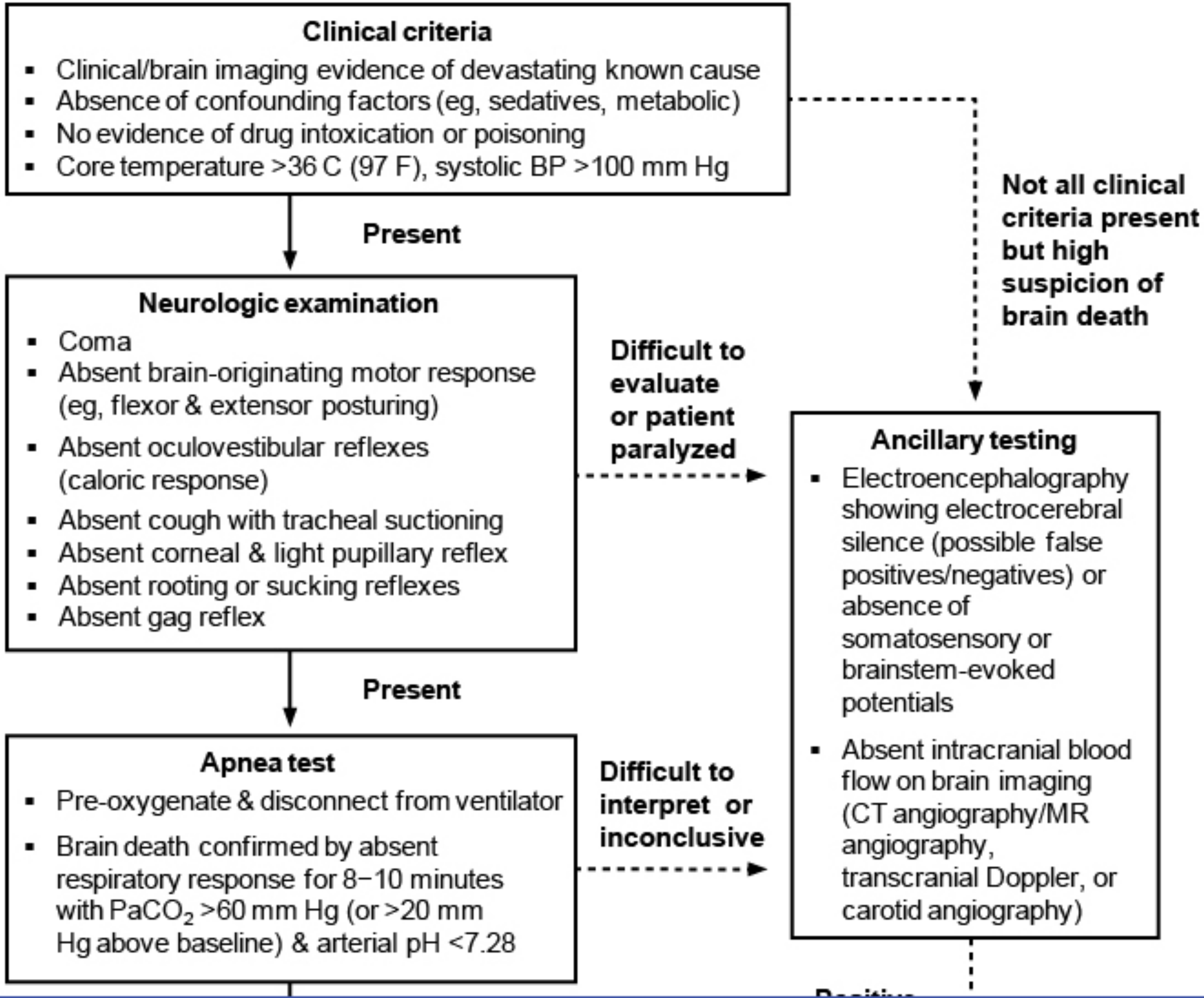


Young women in whom the risk of cervical complications from treatment outweighs the risk for cancer during the observation period

CIN 2
↓
Observation preferred (cytology & colposcopy every 6 months for 1 year)

CIN 3 or inadequate colposcopy
↓
Treatment preferred (ablation or excision of transformation zone)

Diagnosis of brain death



Clinical criteria

- Clinical/brain imaging evidence of devastating known cause
- Absence of confounding factors (eg, sedatives, metabolic)
- No evidence of drug intoxication or poisoning
- Core temperature >36 C (97 F), systolic BP >100 mm Hg

Present

Not all clinical criteria present but high suspicion of brain death

Neurologic examination

- Coma
- Absent brain-originating motor response (eg, flexor & extensor posturing)
- Absent oculovestibular reflexes (caloric response)
- Absent cough with tracheal suctioning
- Absent corneal & light pupillary reflex
- Absent rooting or sucking reflexes
- Absent gag reflex

Difficult to evaluate or patient paralyzed

Ancillary testing

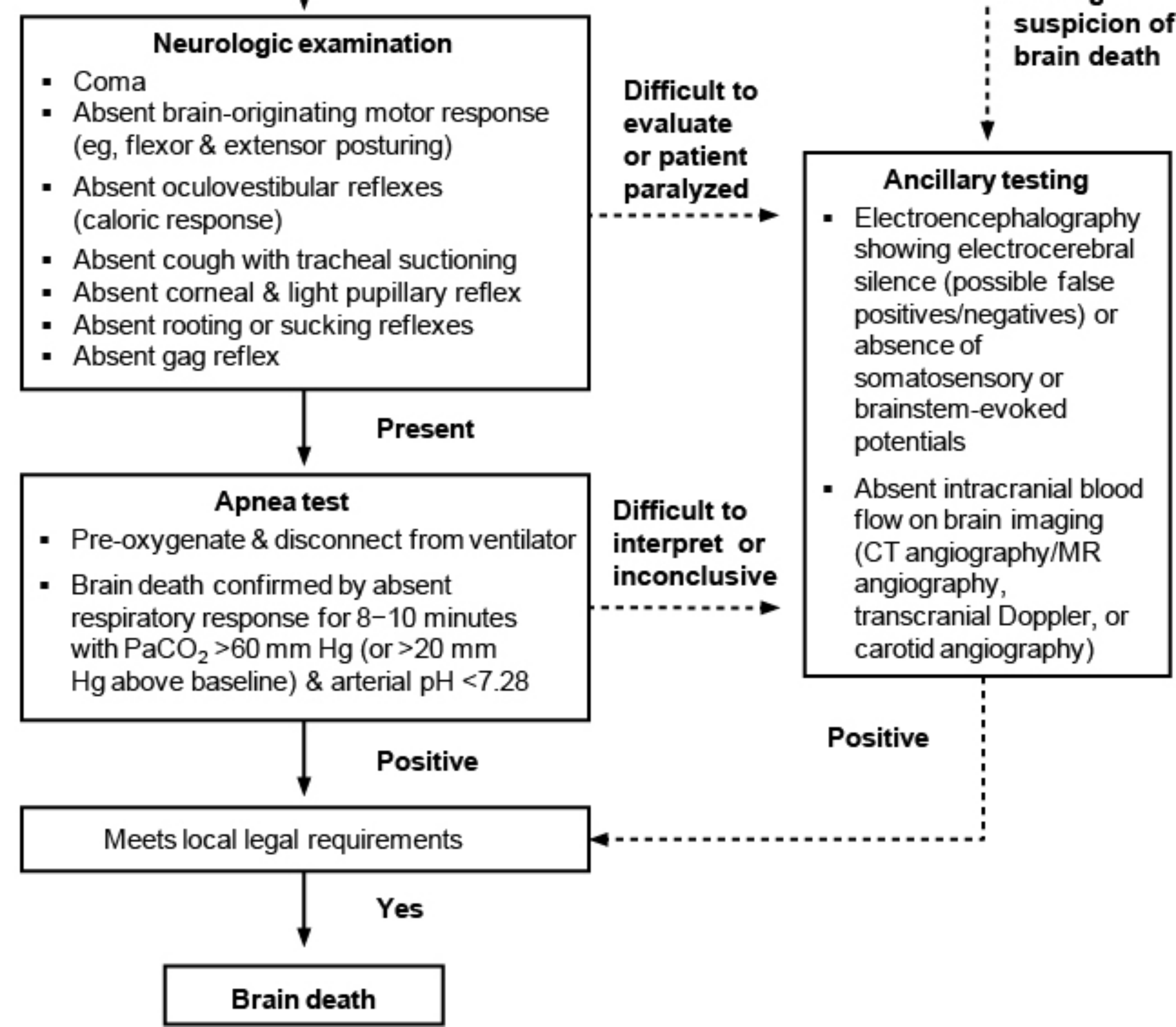
- Electroencephalography showing electrocerebral silence (possible false positives/negatives) or absence of somatosensory or brainstem-evoked potentials
- Absent intracranial blood flow on brain imaging (CT angiography/MR angiography, transcranial Doppler, or carotid angiography)

Present

Apnea test

- Pre-oxygenate & disconnect from ventilator
- Brain death confirmed by absent respiratory response for 8−10 minutes with $PaCO_2$ >60 mm Hg (or >20 mm Hg above baseline) & arterial pH <7.28

Difficult to interpret or inconclusive



Neurologic examination

- Coma
- Absent brain-originating motor response (eg, flexor & extensor posturing)
- Absent oculovestibular reflexes (caloric response)
- Absent cough with tracheal suctioning
- Absent corneal & light pupillary reflex
- Absent rooting or sucking reflexes
- Absent gag reflex

Apnea test

- Pre-oxygenate & disconnect from ventilator
- Brain death confirmed by absent respiratory response for 8−10 minutes with $PaCO_2$ >60 mm Hg (or >20 mm Hg above baseline) & arterial pH <7.28

Ancillary testing

- Electroencephalography showing electrocerebral silence (possible false positives/negatives) or absence of somatosensory or brainstem-evoked potentials
- Absent intracranial blood flow on brain imaging (CT angiography/MR angiography, transcranial Doppler, or carotid angiography)

Meets local legal requirements

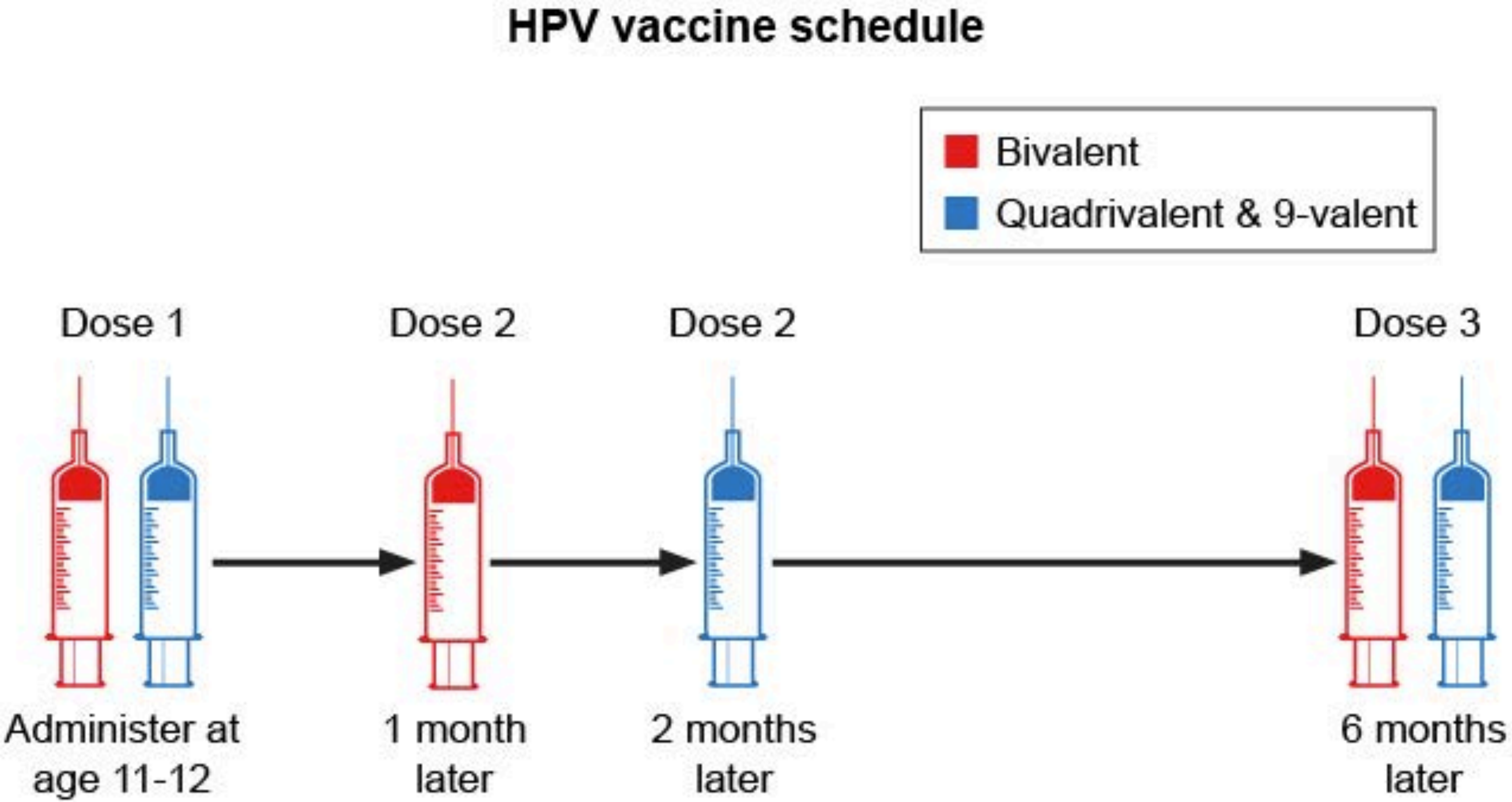
Brain death

suspicion of brain death
Difficult to evaluate or patient paralyzed
Present
Difficult to interpret or inconclusive
Positive
Positive
Yes

Clinical features of fibromyalgia

Clinical presentation	• **Widespread musculoskeletal pain** • **Fatigue** • Cognitive difficulties (eg, impaired attention) • Nonspecific GI symptoms • Depression/anxiety symptoms • **Examination**: Tender points (eg, mid trapezius, costochondral junction, greater trochanter)
Diagnosis	• Symptoms ≥3 months • Normal inflammatory markers • WPI ≥7 & SS score ≥5 **OR** • WPI 3-6 & SS ≥9
Treatment	• **Lifestyle**: Aerobic exercise, sleep hygiene • **Medication**: TCA, SNRI

GI = gastrointestinal; **SS** = symptoms severity; **WPI** = widespread pain index; **TCA** = tricyclic antidepressant; **SNRI** = serotonin-norepinephrine reuptake inhibitor.


HPV vaccine schedule
🟥 Bivalent
🟦 Quadrivalent & 9-valent
Dose 1
Dose 2
Dose 2
Dose 3
Administer at age 11-12
1 month later
2 months later
6 months later

types 6 and 11 cause genital warts; **types 16** and **18 cause** the anogenital **cancers**. Three HPV vaccines have been developed to prevent anogenital disease:

- A bivalent vaccine against strains 16 and 18
- A quadrivalent vaccine against strains 6, 11, 16, and 18
- A 9-valent vaccine against strains 6, 11, 16, and 18, plus 5 other oncogenic strains

Although the HPV vaccination series can be started any time at age 9-26, the recommended time for the first dose is **age 11-12**, ideally well before the onset of sexual activity to maximize protection. The HPV vaccine series consist of **3 doses** that are ideally administered within a 6-month period. When more than the recommended time has elapsed between doses, it is appropriate to resume the series where the patient left off; the entire series need not be restarted. If the vaccine initially used is unknown, the series can be resumed with any type.

History of prior sexual activity, previous HPV infection, anogenital disease, and abnormal Pap smear are **not contraindications** to vaccine administration. The HPV vaccine should not be administered to pregnant women due to limited safety data.

(Choice B) History of severe hypersensitivity reaction to **yeast** is an **absolute contraindication** to the quadrivalent HPV vaccine as it is produced using *Saccharomyces cerevisiae* (baker's yeast). Some forms of the bivalent vaccine contain latex and should not be administered to patients with latex allergies. Gluten intolerance is not a contraindication to the HPV vaccine.

(Choice D) All types of HPV vaccine are not live and can be administered to immunocompromised and immunosuppressed individuals.

The human papillomavirus (HPV) vaccine series should be administered to all individuals age 11-26. History of prior sexual activity, previous HPV infection, anogenital disease, abnormal Pap smear, and immunosuppression are **not contraindications** to the vaccine.

US Preventive Services Task Force recommendations for breast cancer screening

Definitely beneficial - recommended	• Mammogram every 2 years for women age 50–75 • Genetic counseling & possible testing for women with evidence of high-risk family history*
Possibly beneficial - individualize	• Mammogram in women before age 50
Definitely not beneficial - not recommended	• Self-breast examination at any age • Genetic testing for women without high-risk family history
Uncertain benefit	• Mammogram in women age >75 • Clinical breast examination • Breast magnetic resonance imaging

* **High-risk family history includes:**

- **Two 1st-degree relatives** with breast cancer, including 1 before age 50
- Three or more 1st- or 2nd-degree relatives with breast cancer
- 1st- or 2nd-degree relative with **breast & ovarian cancer**
- 1st-degree relative with **bilateral breast cancer**
- Breast cancer in a male relative
- Ashkenazi Jewish women with any 1st- or 2nd-degree relatives with breast or ovarian cancer

Indications for surgery in asymptomatic primary hyperparathyroidism*

- Serum calcium level ≥1 mg/dL above upper limit of normal
- Young age (<50 years)
- Bone mineral density <T-2.5 at any site
- Reduced renal function (estimated glomerular filtration rate <60 mL/min)

*Familial hypocalciuric hypercalcemia should be excluded prior to parathyroidectomy.

Indications for parathyroidectomy in primary hyperparathyroidism are as follows:

1. All symptomatic patients
2. Asymptomatic patients with the following:
    - Serum calcium level ≥1 mg/dL above the upper limit of normal
    - Young age (<50)
    - Bone mineral density <T-2.5 at any site
    - Reduced renal function (estimated glomerular filtration rate <60 mL/min)

Thyroiditis

	Clinical features	Diagnostic testing
Hashimoto thyroiditis	• Predominant **hypothyroid** features • Diffuse goiter	• Positive thyroid peroxidase antibody (**TPO antibody**) • Variable radioiodine uptake
Silent thyroiditis (painless thyroiditis)	• **Mild, brief hyperthyroid phase** • Spontaneous recovery • Small, nontender goiter • Variant of *Hashimoto thyroiditis*	• Positive TPO antibody • Low radioiodine uptake
Subacute thyroiditis (de Quervain's thyroiditis)	• Likely from postviral inflammatory process • Prominent fever & hyperthyroid symptoms • **Painful/tender goiter**	• **Elevated erythrocyte sedimentation rate** & c-reactive protein • Low radioiodine uptake

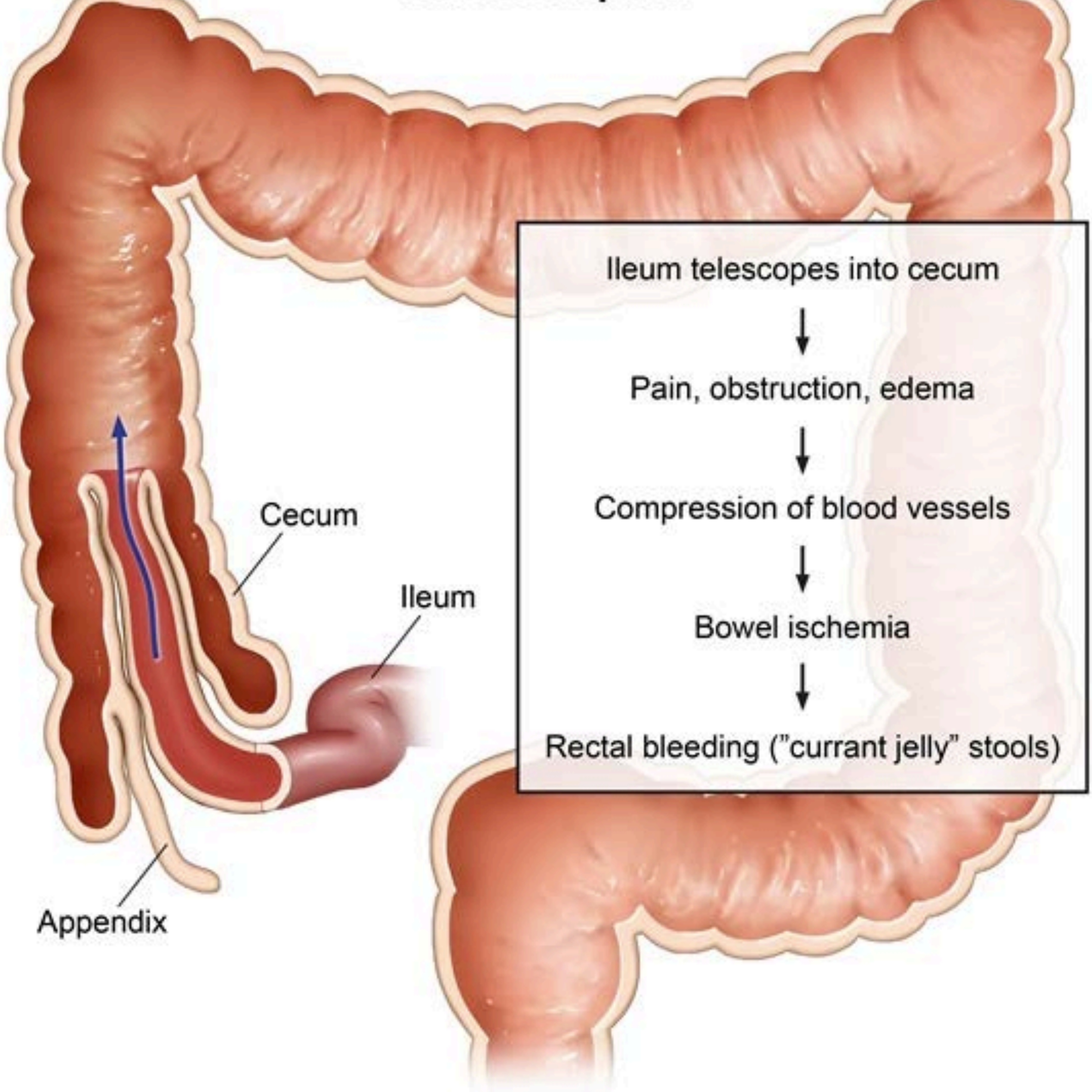
The common causes of thyroiditis with thyroid pain and tenderness include:

1. Subacute thyroiditis (postviral inflammation)
2. Infections (bacterial suppuration)
3. Radiation thyroiditis
4. Vigorous palpation- or trauma-induced thyroiditis

Streptococcal tonsillopharyngitis	
Signs & symptoms	• Abrupt onset of sore throat • Fever • Absence of cough & viral symptoms • Abdominal pain/vomiting
Examination	• Palatal petechiae • Tonsillar erythema & **exudates** • **Tender anterior cervical nodes**
Diagnosis	• Throat culture • Rapid streptococcal antigen test
Treatment	• **Penicillin** or **amoxicillin**
Complications	• Peritonsillar abscess • Cervical lymphadenitis • Rheumatic fever • Post-streptococcal glomerulonephritis

Intussusception	
Risk factors	• Recent viral illness or rotavirus vaccination • Pathological lead points: ∘ Meckel’s diverticulum ∘ Henoch-Schönlein purpura ∘ Celiac disease ∘ Intestinal tumor ∘ Polyps
Clinical presentation	• Episodic, crampy abdominal pain • “Currant jelly” stools • Sausage-shaped abdominal mass
Diagnosis	• “Target sign” on ultrasound
Treatment	• Enema (air or water-soluble contrast) • Surgical removal of lead point (if present)

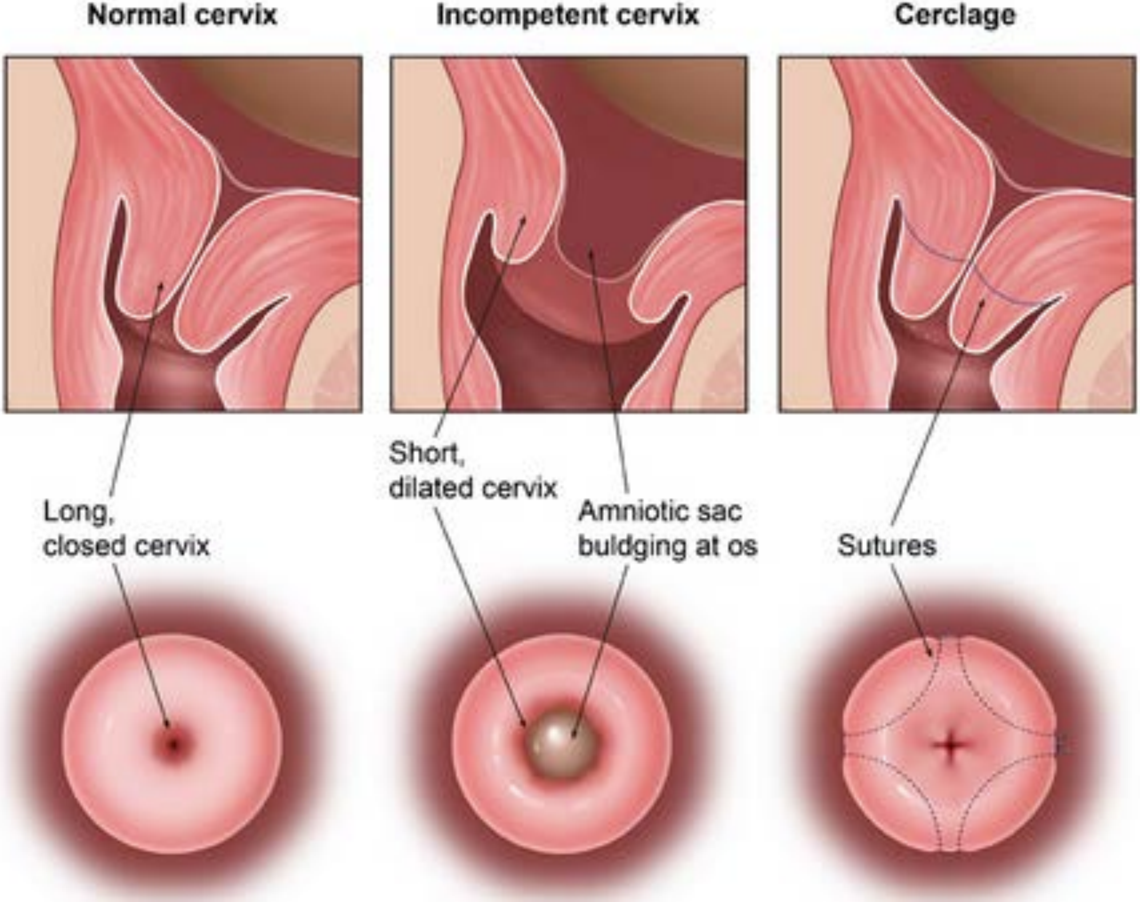
Intussusception


Ileum telescopes into cecum
↓
Pain, obstruction, edema
↓
Compression of blood vessels
↓
Bowel ischemia
↓
Rectal bleeding ("currant jelly" stools)
Cecum
Ileum
Appendix

Cervical insufficiency during pregnancy	
Risk factors	• Collagen abnormalities • Uterine anomalies • Prior mechanical cervical dilation • Prior obstetric cervical laceration • Prior conization or loop electrosurgical excision procedure
Diagnosis	• History of painless cervical dilation with second trimester loss • Painless cervical dilation in the second trimester of a current pregnancy • History of prior preterm birth and current ultrasound cervical length <25 mm during the second trimester
Management	Serial ultrasound evaluation of cervical length and cerclage placement during the second trimester

Widespread pain index (score 0-19)	**Symptom severity scale (0 = no problem, 1 = slight, 2 = moderate, 3 = severe)**
• Neck • Jaw (left & right) • Shoulder (left & right) • Upper arm (left & right) • Lower arm (left & right) • Chest • Abdomen • Upper back • Lower back • Hip (left & right) • Upper leg (left & right) • Lower leg (left & right)	• Fatigue (0-3) • Waking unrefreshed (0-3) • Cognitive symptoms (0-3) • Somatic symptoms 0 = none 1 = few 2 = moderate 3 = many Final score between 0-12

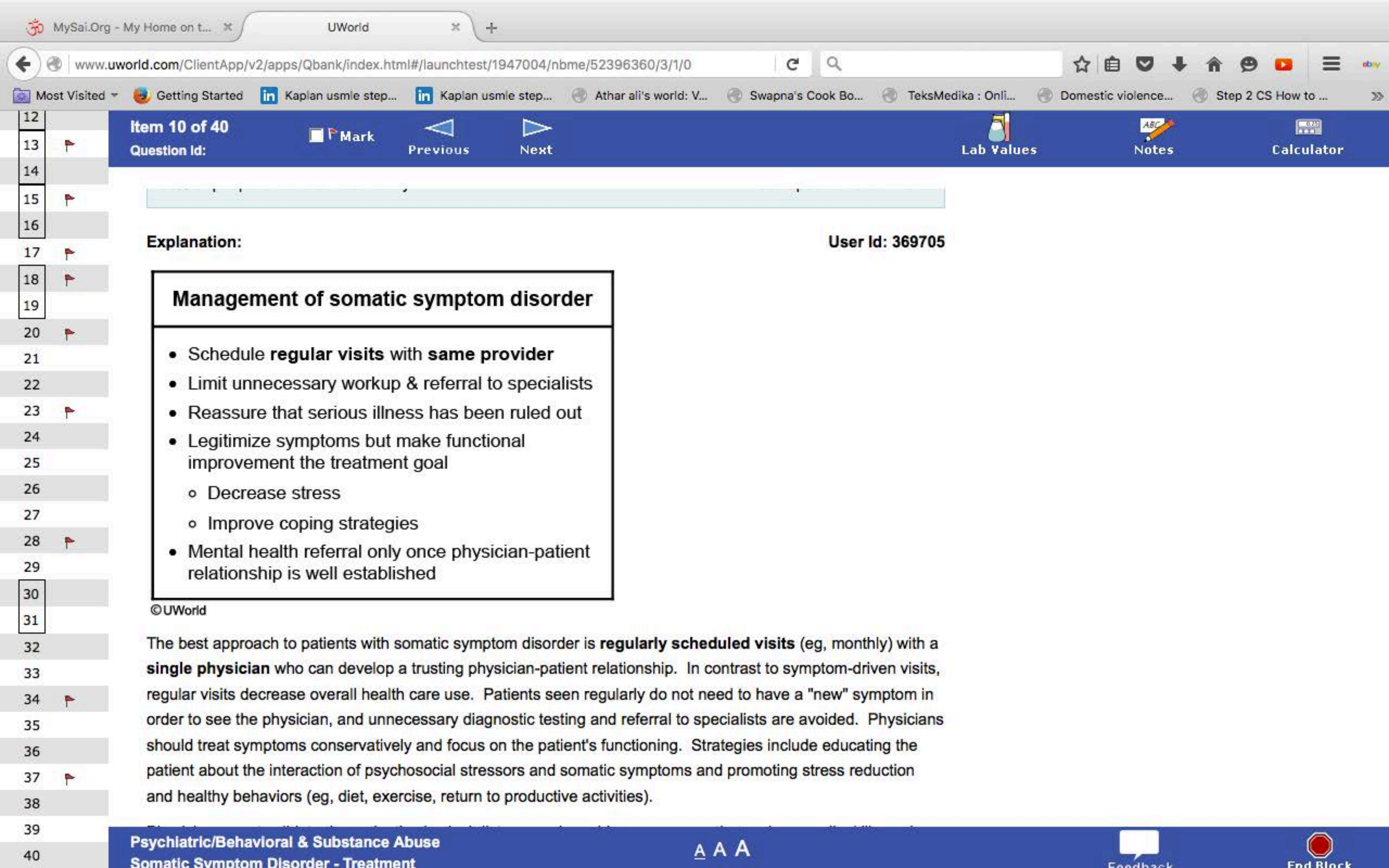
Cerclage


Normal cervix
Incompetent cervix
Cerclage
Long,
closed cervix
Short,
dilated cervix
Amniotic sac
buldging at os
Sutures

Contraindications to varicella-zoster virus vaccine

- Anaphylaxis to neomycin
- Anaphylaxis to gelatin
- Pregnancy
- Immunodeficient state
  - Congenital immunodeficiencies
  - Long-term immunosuppressive therapy
  - Hematologic or solid tumors
  - Severe HIV infection

Key features of somatic symptom & related disorders	
Somatic symptom disorder	Excessive anxiety & preoccupation with ≥1 unexplained symptoms
Illness anxiety disorder	Fear of having a serious illness despite few or no symptoms & consistently negative evaluations
Conversion disorder (functional neurologic symptom disorder)	**Neurologic** symptom incompatible with any known neurologic disease; often acute onset associated with stress
Factitious disorder	Intentional falsification or inducement of symptoms with goal to assume **sick role**
Malingering	Falsification or exaggeration of symptoms to obtain external incentives (**secondary gain**)


MySai.Org - My Home on t...
UWorld
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Most Visited
Getting Started
Kaplan usmle step...
Kaplan usmle step...
Athar ali's world: V...
Swapna's Cook Bo...
TeksMedika : Onli...
Domestic violence...
Step 2 CS How to ...
Item 10 of 40
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Lab Values
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Psychiatric/Behavioral & Substance Abuse
Somatic Symptom Disorder - Treatment
A A A
Feedback
End Block

Explanation: **User Id: 369705**

Management of somatic symptom disorder

- Schedule **regular visits** with **same provider**
- Limit unnecessary workup & referral to specialists
- Reassure that serious illness has been ruled out
- Legitimize symptoms but make functional improvement the treatment goal
  - Decrease stress
  - Improve coping strategies
- Mental health referral only once physician-patient relationship is well established

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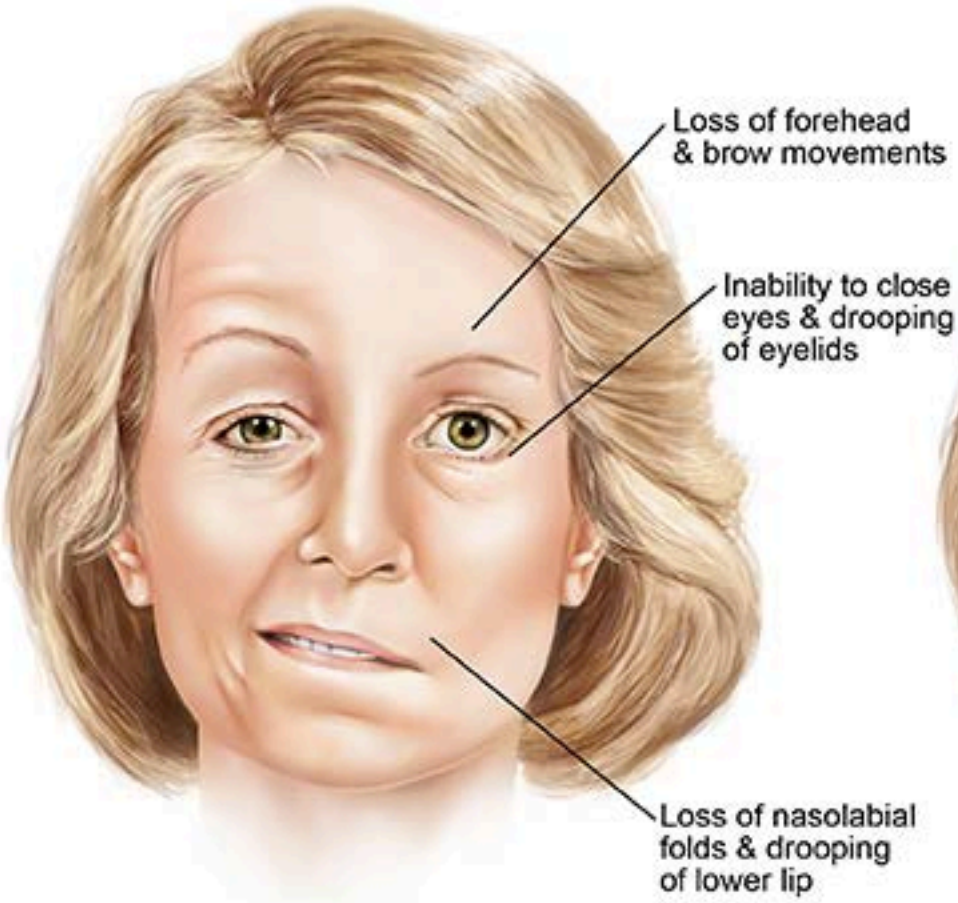
The best approach to patients with somatic symptom disorder is **regularly scheduled visits** (eg, monthly) with a **single physician** who can develop a trusting physician-patient relationship. In contrast to symptom-driven visits, regular visits decrease overall health care use. Patients seen regularly do not need to have a "new" symptom in order to see the physician, and unnecessary diagnostic testing and referral to specialists are avoided. Physicians should treat symptoms conservatively and focus on the patient's functioning. Strategies include educating the patient about the interaction of psychosocial stressors and somatic symptoms and promoting stress reduction and healthy behaviors (eg, diet, exercise, return to productive activities).

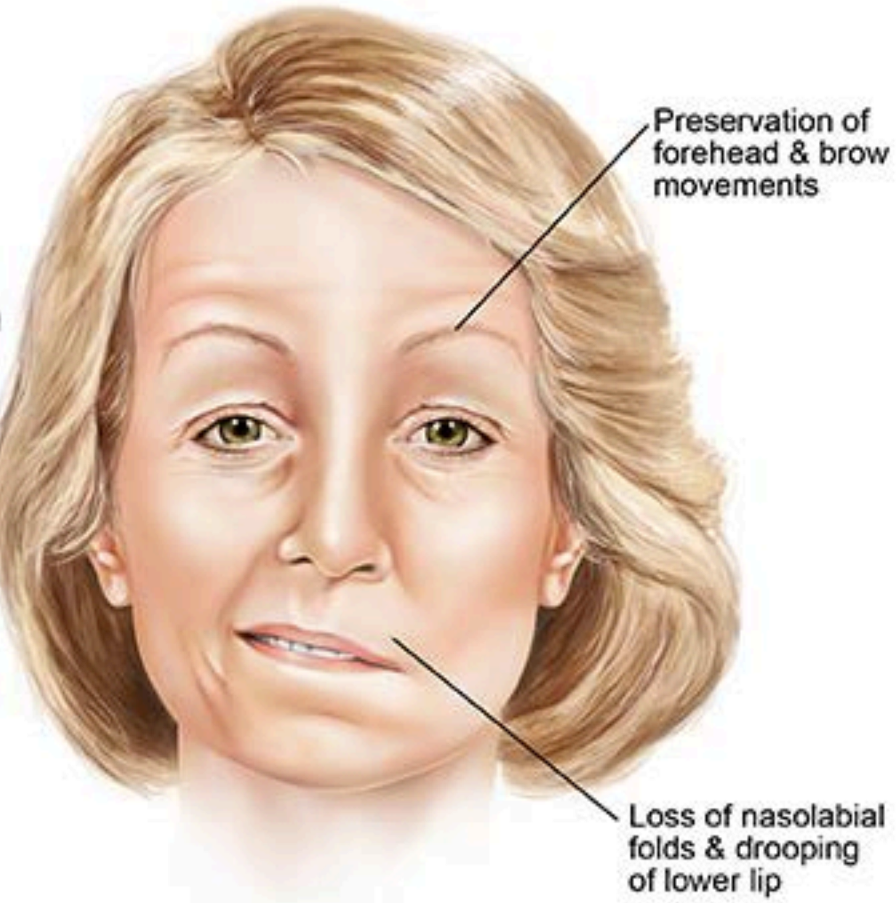
Management of somatic symptom disorder

- Schedule **regular visits** with **same provider**
- Limit unnecessary workup & referral to specialists
- Reassure that serious illness has been ruled out
- Legitimize symptoms but make functional improvement the treatment goal
    - Decrease stress
    - Improve coping strategies
- Mental health referral only once physician-patient relationship is well established



Peripheral facial palsy

Loss of forehead & brow movements
Inability to close eyes & drooping of eyelids
Loss of nasolabial folds & drooping of lower lip



Central facial palsy

Preservation of forehead & brow movements
Loss of nasolabial folds & drooping of lower lip

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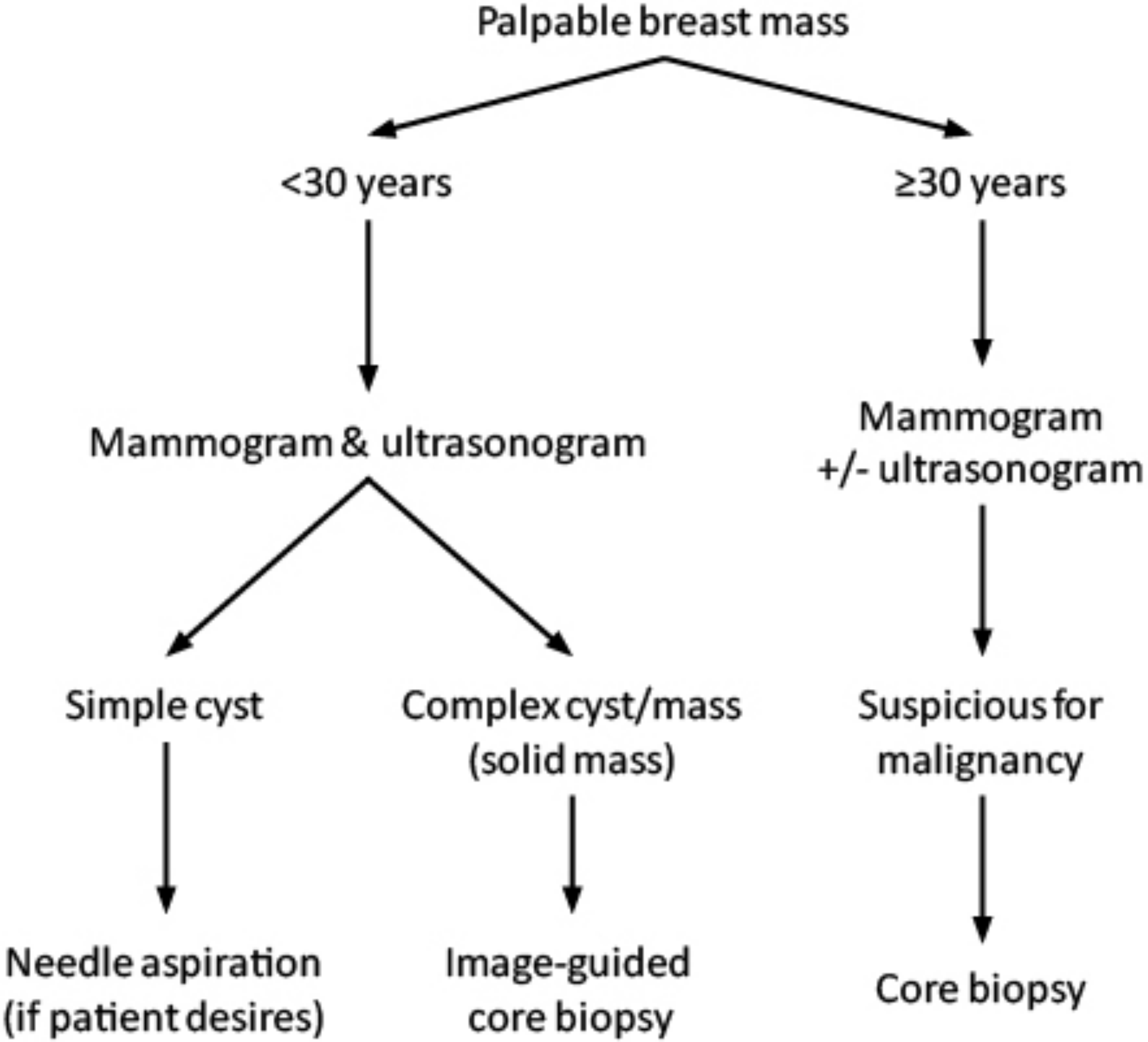
Differential diagnosis of neonatal breast enlargement

Diagnosis	Clinical features	Management
Isolated premature thelarche	• Unilateral or bilateral • Palpable, firm, disc-like tissues under both areolae • +/- Galactorrhea	Reassurance
Mastitis	• Unilateral • Focal erythema, tenderness, induration • +/- Purulent discharge	Antibiotics
Abscess	• Unilateral • Focal erythema, tenderness, fluctuance • +/- Purulent discharge	Antibiotics +/- drainage


Palpable breast mass
<30 years
≥30 years
Mammogram & ultrasonogram
Mammogram +/- ultrasonogram
Simple cyst
Complex cyst/mass (solid mass)
Suspicious for malignancy
Needle aspiration (if patient desires)
Image-guided core biopsy
Core biopsy

Management of cat & dog bites

Microbiology	• *Pasteurella multocida* • *Capnocytophaga* • Staphylococci • Streptococci • Anaerobic bacteria
Wound care	• Cleansing with **povidone iodine** or **benzalkonium chloride** • Copious irrigation with saline • Wound exploration to determine injury extent
Indications for antibiotic prophylaxis	• **Deep puncture wounds (especially cat bites)** • Moderate to severe crush wounds • Wound on the face, hands, genitalia, or near a bone or joint • Wounds requiring closure • Wounds in immunocompromised persons
Antibiotic therapy	• First line: **Amoxicillin-clavulanate**

Oral antidiabetic agents for type 2 diabetes mellitus treatment

Agent	Mechanism of action	Side effects
Insulin secretagogues • Sulfonylureas • Meglitinides	Increases insulin secretion by inhibiting β-cell K_{ATP} channels	• Hypoglycemia • Weight gain
Biguanides • Metformin	Stimulates AMPK, decreasing glucose production & insulin resistance	• Lactic acidosis
Thiazolidinediones • Pioglitazone • Rosiglitazone	Activates transcription regulator PPAR-γ, decreasing insulin resistance	• Fluid retention/heart failure • Weight gain
GLP-1 agonists • Exenatide • Liraglutide	Increases glucose-dependent insulin secretion, decreases glucagon secretion, delays gastric emptying	• Pancreatitis

Thiazolidinediones • Pioglitazone • Rosiglitazone	Activates transcription regulator PPAR-γ, decreasing insulin resistance	• Fluid retention/heart failure • Weight gain
GLP-1 agonists • Exenatide • Liraglutide	Increases glucose-dependent insulin secretion, decreases glucagon secretion, delays gastric emptying	• Pancreatitis
DPP4 inhibitors • Sitagliptin • Saxagliptin	Increases endogenous GLP-1 & GIP levels	• Nasopharyngitis
α-glucosidase inhibitors • Acarbose • Miglitol	Reduces intestinal disaccharide absorption	• Diarrhea • Flatulence
SGLT2 inhibitors • Canagliflozin • Dapagliflozin	Increases renal glucose excretion	• Urinary tract infections • Hypotension

AMPK = adenosine monophosphate-activated protein kinase; **DPP4** = dipeptidyl-peptidase 4;
GIP = gastric inhibitory polypeptide; **GLP-1** = glucagon-like peptide 1;
PPAR-γ = peroxisome proliferator activated receptor γ; **SGLT2** = sodium glucose cotransporter 2.

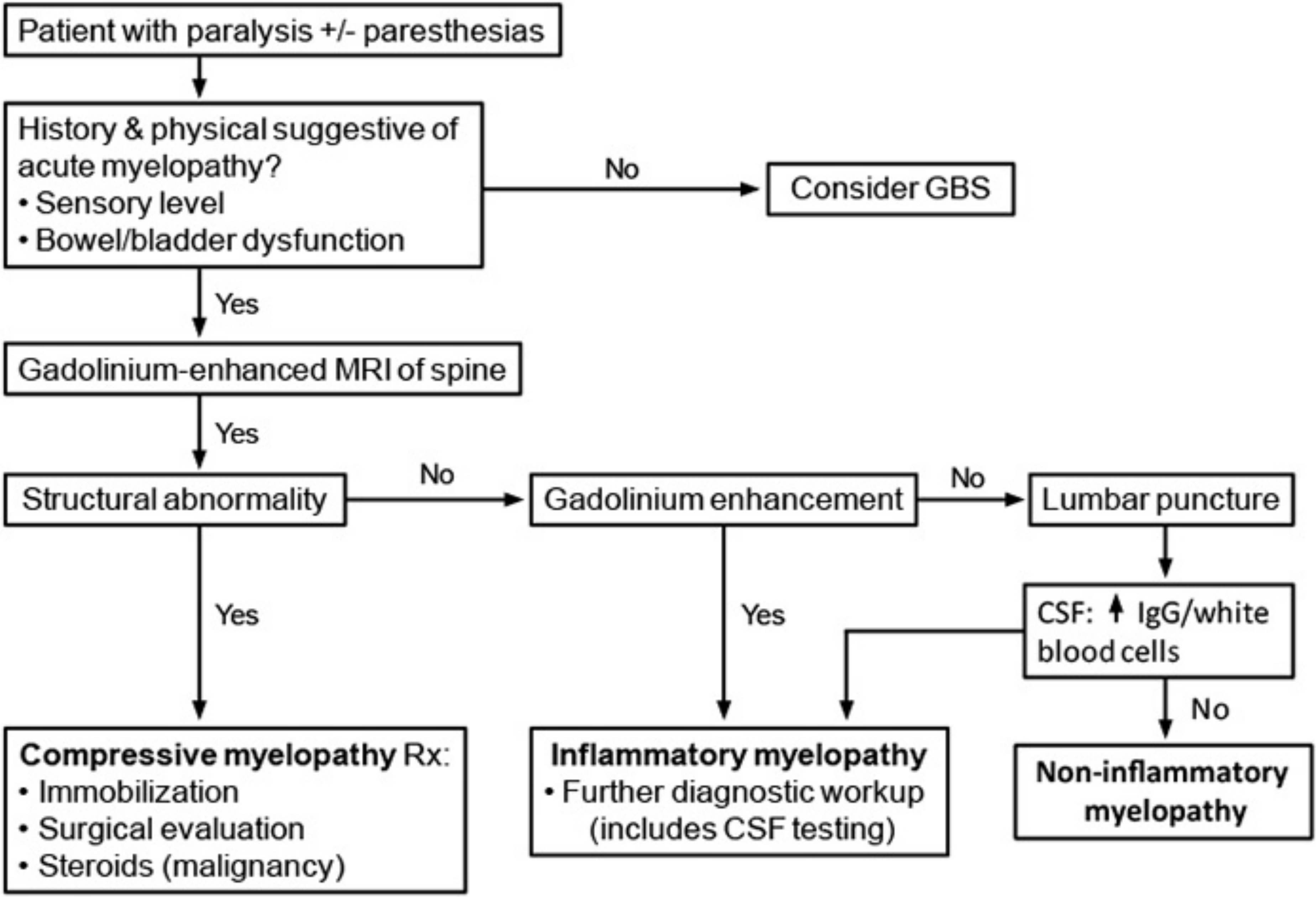
Triple drug therapy with a PPI, clarithromycin, and amoxicillin (metronidazole in case of penicillin allergy) for two weeks is the regimen of choice for the eradication of *H. pylori* infection.

*Keep your eyes open for any drug contraindications or allergies.

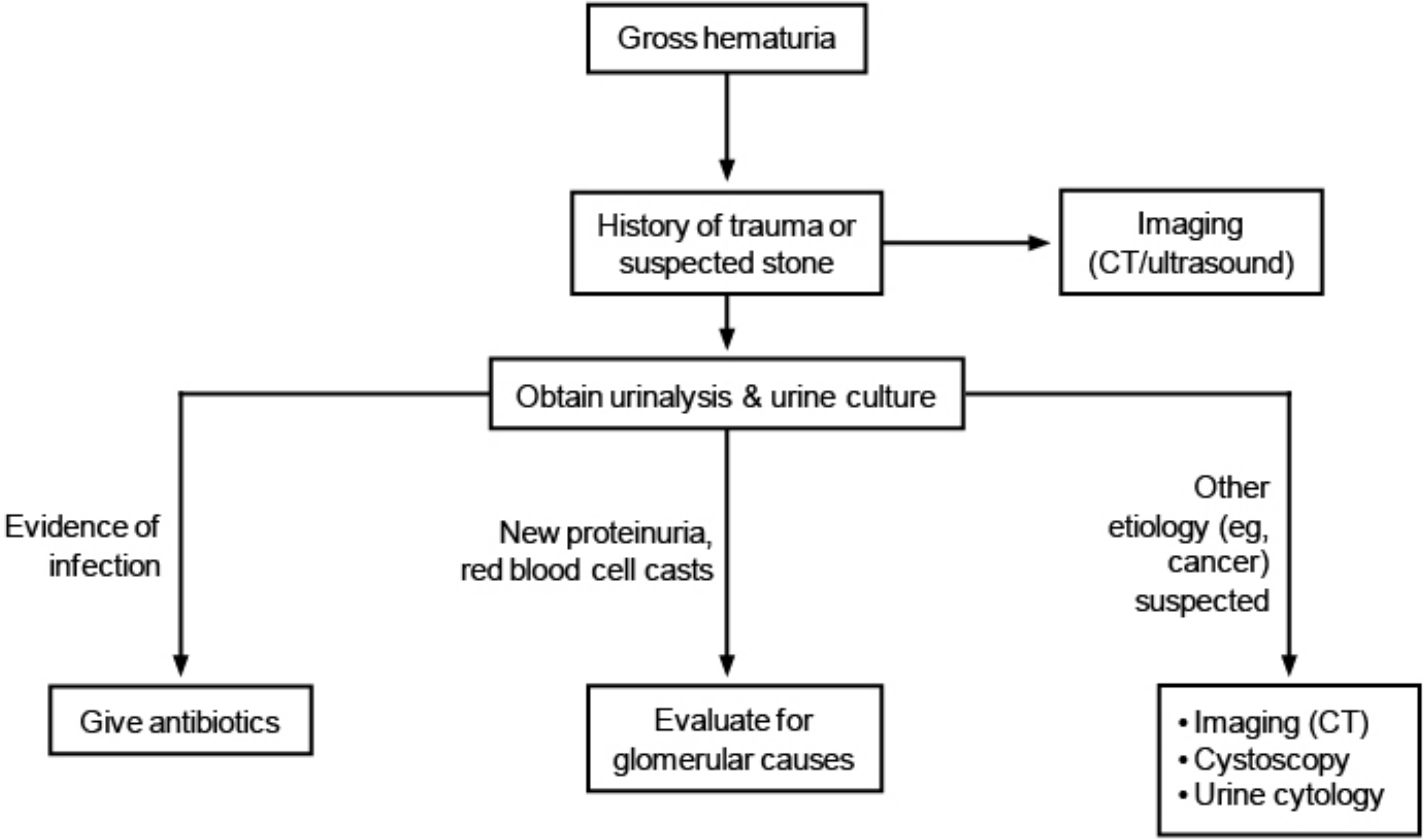
Henoch-Schönlein purpura	
Pathogenesis	• IgA-mediated leukocytoclastic vasculitis
Clinical manifestations	• Palpable purpura • Arthritis/arthralgia • Abdominal pain, intussusceptions • Renal disease similar to IgA nephropathy
Laboratory findings	• Normal platelet count & coagulation studies • Normal to ↑ creatinine • Hematuria +/- RBC casts +/- proteinuria
Treatment	• Supportive (hydration & NSAIDs) for most patients • Hospitalization & systemic glucocorticoids in patients with severe symptoms

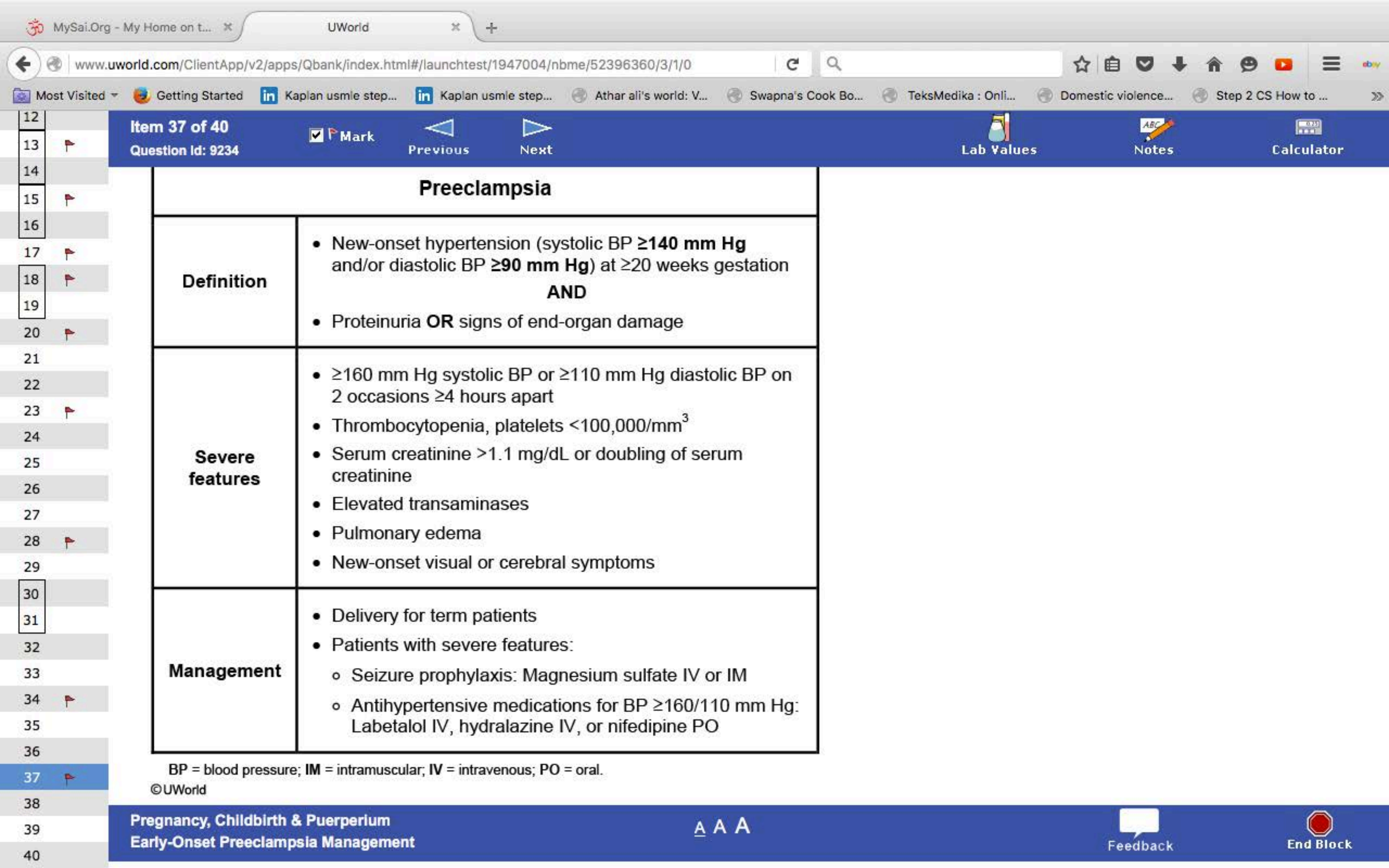
RBC = red blood cell; **NSAIDs** = nonsteroidal antiinflammatory drugs.

Evaluation of suspected myelopathy


Patient with paralysis +/- paresthesias
History & physical suggestive of acute myelopathy?
• Sensory level
• Bowel/bladder dysfunction
No
Consider GBS
Yes
Gadolinium-enhanced MRI of spine
Yes
Structural abnormality
No
Gadolinium enhancement
No
Lumbar puncture
Yes
Yes
CSF: ↑ IgG/white blood cells
No
Compressive myelopathy Rx:
• Immobilization
• Surgical evaluation
• Steroids (malignancy)
Inflammatory myelopathy
• Further diagnostic workup (includes CSF testing)
Non-inflammatory myelopathy

Evaluation of gross hematuria


Gross hematuria
History of trauma or suspected stone
Imaging (CT/ultrasound)
Obtain urinalysis & urine culture
Evidence of infection
New proteinuria, red blood cell casts
Other etiology (eg, cancer) suspected
Give antibiotics
Evaluate for glomerular causes
• Imaging (CT)
• Cystoscopy
• Urine cytology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Athar ali's world: V...
Swapna's Cook Bo...
TeksMedika : Onli...
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Step 2 CS How to ...
Item 37 of 40
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Preeclampsia	
Definition	• New-onset hypertension (systolic BP **≥140 mm Hg** and/or diastolic BP **≥90 mm Hg**) at ≥20 weeks gestation **AND** • Proteinuria **OR** signs of end-organ damage
Severe features	• ≥160 mm Hg systolic BP or ≥110 mm Hg diastolic BP on 2 occasions ≥4 hours apart • Thrombocytopenia, platelets <100,000/mm^3 • Serum creatinine >1.1 mg/dL or doubling of serum creatinine • Elevated transaminases • Pulmonary edema • New-onset visual or cerebral symptoms
Management	• Delivery for term patients • Patients with severe features: ∘ Seizure prophylaxis: Magnesium sulfate IV or IM ∘ Antihypertensive medications for BP ≥160/110 mm Hg: Labetalol IV, hydralazine IV, or nifedipine PO

BP = blood pressure; **IM** = intramuscular; **IV** = intravenous; **PO** = oral.

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Pregnancy, Childbirth & Puerperium
Early-Onset Preeclampsia Management
A A A
Feedback
End Block

Preeclampsia	
Definition	• New-onset hypertension (systolic BP **≥140 mm Hg** and/or diastolic BP **≥90 mm Hg**) at ≥20 weeks gestation **AND** • Proteinuria **OR** signs of end-organ damage
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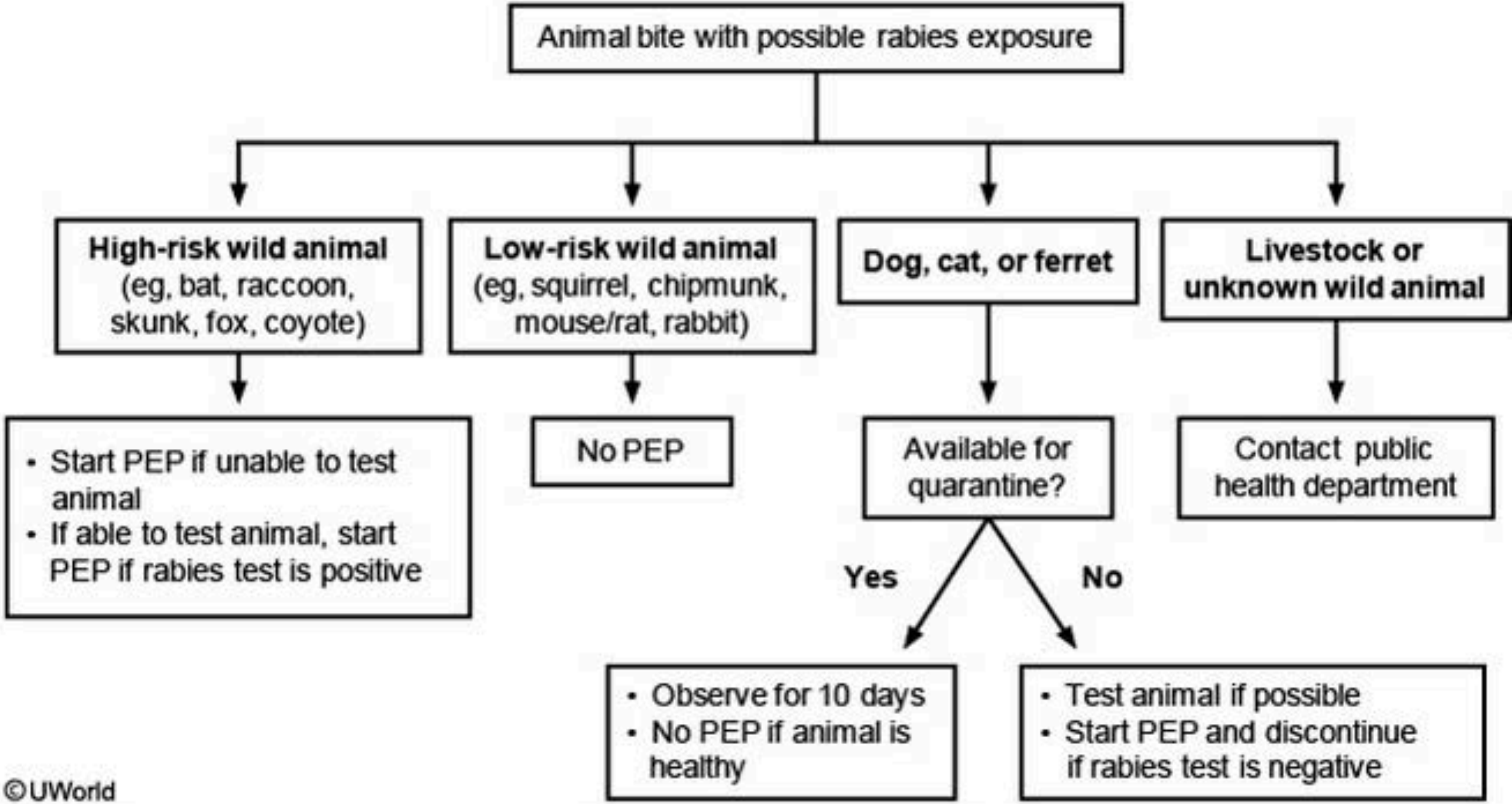
Management	• Delivery for term patients • Patients with severe features: ◦ Seizure prophylaxis: Magnesium sulfate IV or IM ◦ Antihypertensive medications for BP ≥160/110 mm Hg: Labetalol IV, hydralazine IV, or nifedipine PO

BP = blood pressure; **IM** = intramuscular; **IV** = intravenous; **PO** = oral.

Postexposure prophylaxis (PEP) for rabies


Animal bite with possible rabies exposure
High-risk wild animal (eg, bat, raccoon, skunk, fox, coyote)
Low-risk wild animal (eg, squirrel, chipmunk, mouse/rat, rabbit)
Dog, cat, or ferret
Livestock or unknown wild animal
• Start PEP if unable to test animal
• If able to test animal, start PEP if rabies test is positive
No PEP
Available for quarantine?
Contact public health department
Yes
No
• Observe for 10 days
• No PEP if animal is healthy
• Test animal if possible
• Start PEP and discontinue if rabies test is negative

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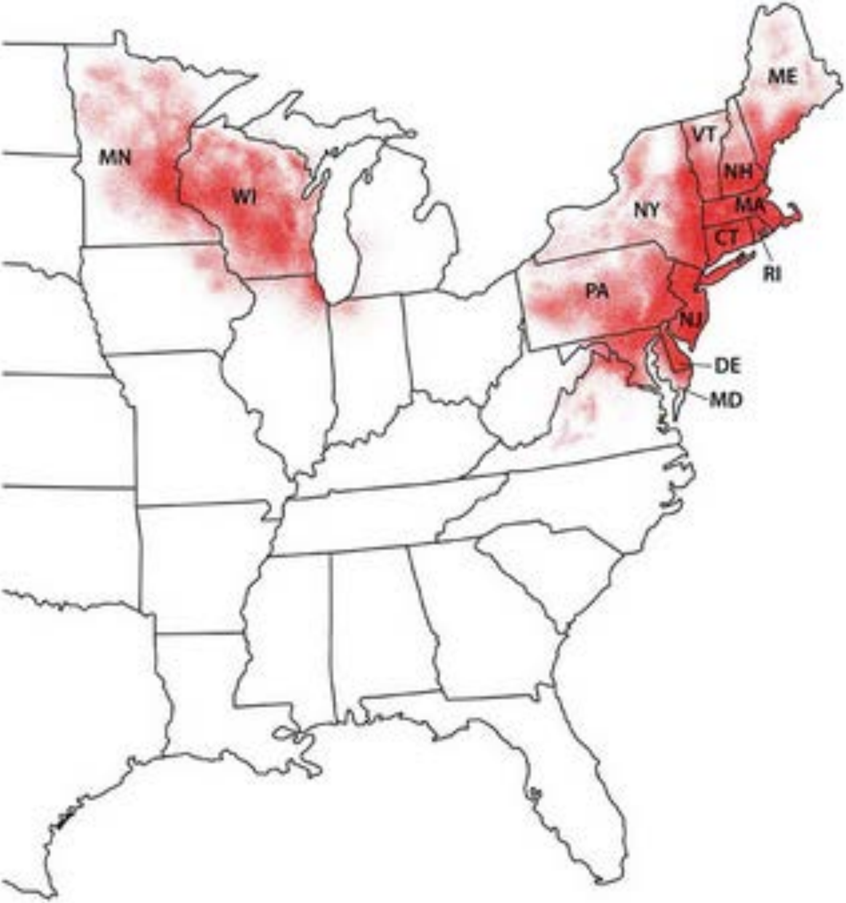
Lyme Disease: Endemic Areas in the United States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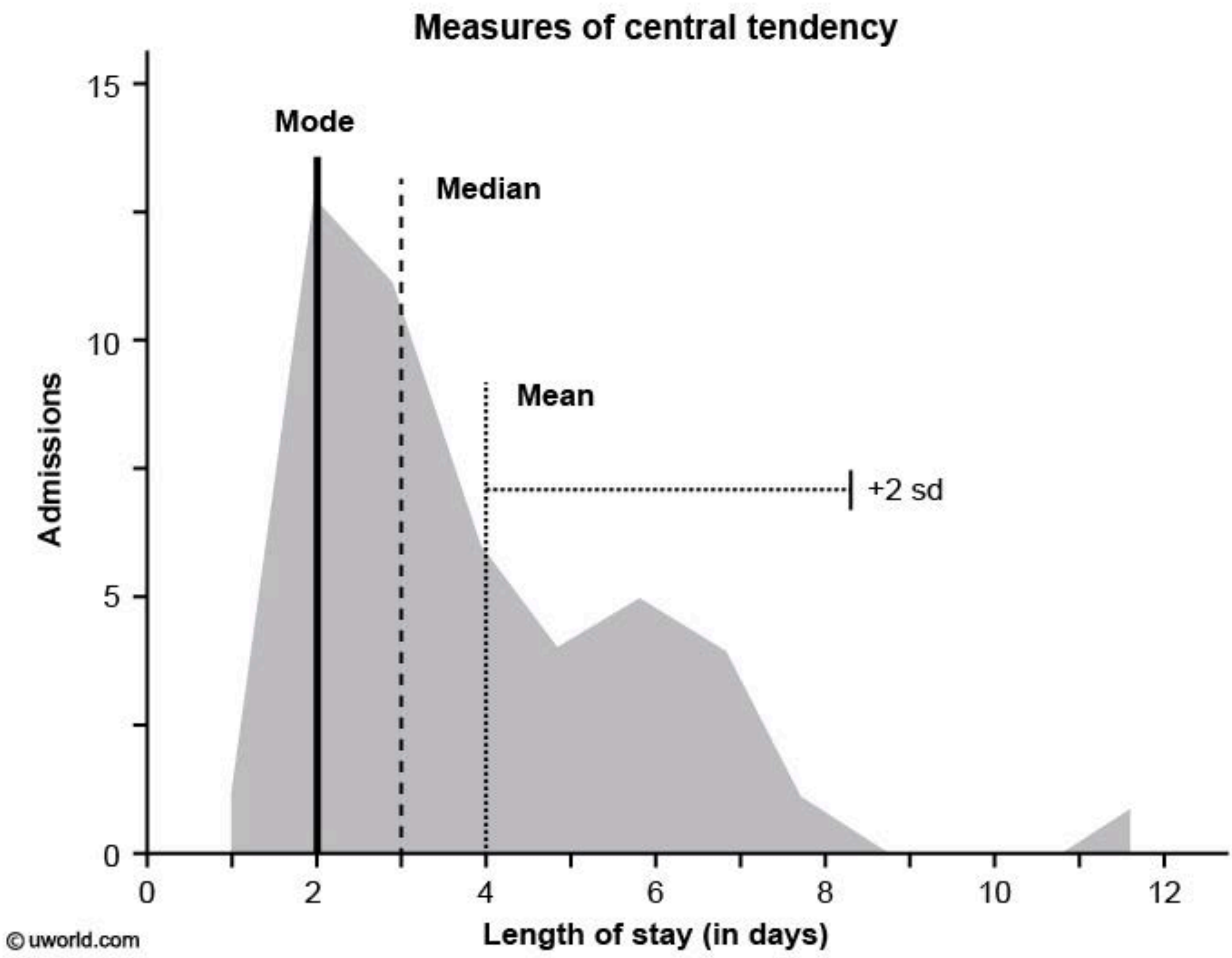
Measures of central tendency
Mode
Median
Mean
+2 sd
Admissions
15
10
5
0
0
2
4
6
8
10
12
Length of stay (in days)
© uworld.com

Identifying information	- Name, age, gender, diagnosis
Do not resuscitate/ do not intubate status	- Patient is full code
Hospital course & recent events	- Admitted 4 days ago with COPD exacerbation, in ICU for 1 day, switched from intravenous to oral prednisone today, currently O_2 of 91% on 1 L O_2 - Blood sugars high, required 12 units of insulin 2 hours ago - 7 x 3 cm abscess found on hospital day 2, underwent incision & drainage on day 3, ultrasound today showed no improvement
Acuity/current condition	- Currently afebrile; condition is stable
Anticipatory information	- If spikes a fever, start antibiotic & check blood cultures - If mental status changes, check a blood gas, restart intravenous prednisone, consider transfer to intensive care unit - Avoid opiates as patient has addiction history
Plan & tasks (by organ system)	- Continue serial ultrasounds of abscess & call surgery for repeat incision & drainage if worsening

Data	Example
Identifying information	• Name, age, gender, diagnosis
Do not resuscitate/ do not intubate status	• Patient is full code
Hospital course & recent events	• Admitted 4 days ago with COPD exacerbation, in ICU for 1 day, switched from intravenous to oral prednisone today, currently O_2 of 91% on 1 L O_2 • Blood sugars high, required 12 units of insulin 2 hours ago • 7 x 3 cm abscess found on hospital day 2, underwent incision & drainage on day 3, ultrasound today showed no improvement
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Plan & tasks (by organ system)	• Continue serial ultrasounds of abscess & call surgery for repeat incision & drainage if worsening

Evaluation of hypoglycemia

	Serum insulin	C-peptide	Hypoglycemic drug assay
Exogenous insulin	Normal/increased	**Low**	Negative
Oral hypoglycemic agents	Normal/increased	Normal/elevated	**Positive**
Insulinoma	Normal/increased	Normal/elevated	Negative

The first step to differentiate insulinoma from surreptitious medication ingestion is to obtain a serum assay for oral hypoglycemic agents. If no medications are detected, insulinoma becomes more likely, and ultrasound or CT imaging can localize the tumor for subsequent surgical resection **(Choice B)**.

The following principles should guide the evaluation of hypoglycemia:

1. Whipple's triad must be fulfilled before a hypoglycemia workup is initiated. Many normal individuals may have blood glucose in the nominal hypoglycemic range without symptoms of hypoglycemia.
2. Low blood glucose in normal individuals will suppress production of insulin, C-peptide, and proinsulin. In the presence of significant hypoglycemia, normal levels of these hormones indicate an abnormal response.
3. Fingerstick blood glucose measurement is unreliable in the hypoglycemic range. Low blood glucose recorded by a bedside glucometer must be confirmed by a standard laboratory assay.
4. Blood samples for biochemical testing must be taken when the patient is hypoglycemic and before glucose administration.

Vitamin D deficiency	
Risk factors	• Institutionalized (eg, nursing homes) • Dark skin • Decreased sun exposure • Obesity • Osteoporosis • Malabsorption • Advanced age • Chronic kidney disease
Clinical features	• Usually asymptomatic • Low bone density • Fracture • Osteomalacia: Bone pain, muscle weakness
Diagnosis	• **Deficiency**: Serum 25(OH)D <20 ng/mL • **Insufficiency**: Serum 25(OH)D 20-30 ng/mL
Treatment	**Initial treatment** • Cholecalciferol (vitamin D3) 50,000 IU/week for 8 weeks to achieve 25(OH)D >30 ng/mL **Maintenance** • Normal intestinal absorption: 1500-2000 IU/day • Malabsorption: 3000-6000 IU/day

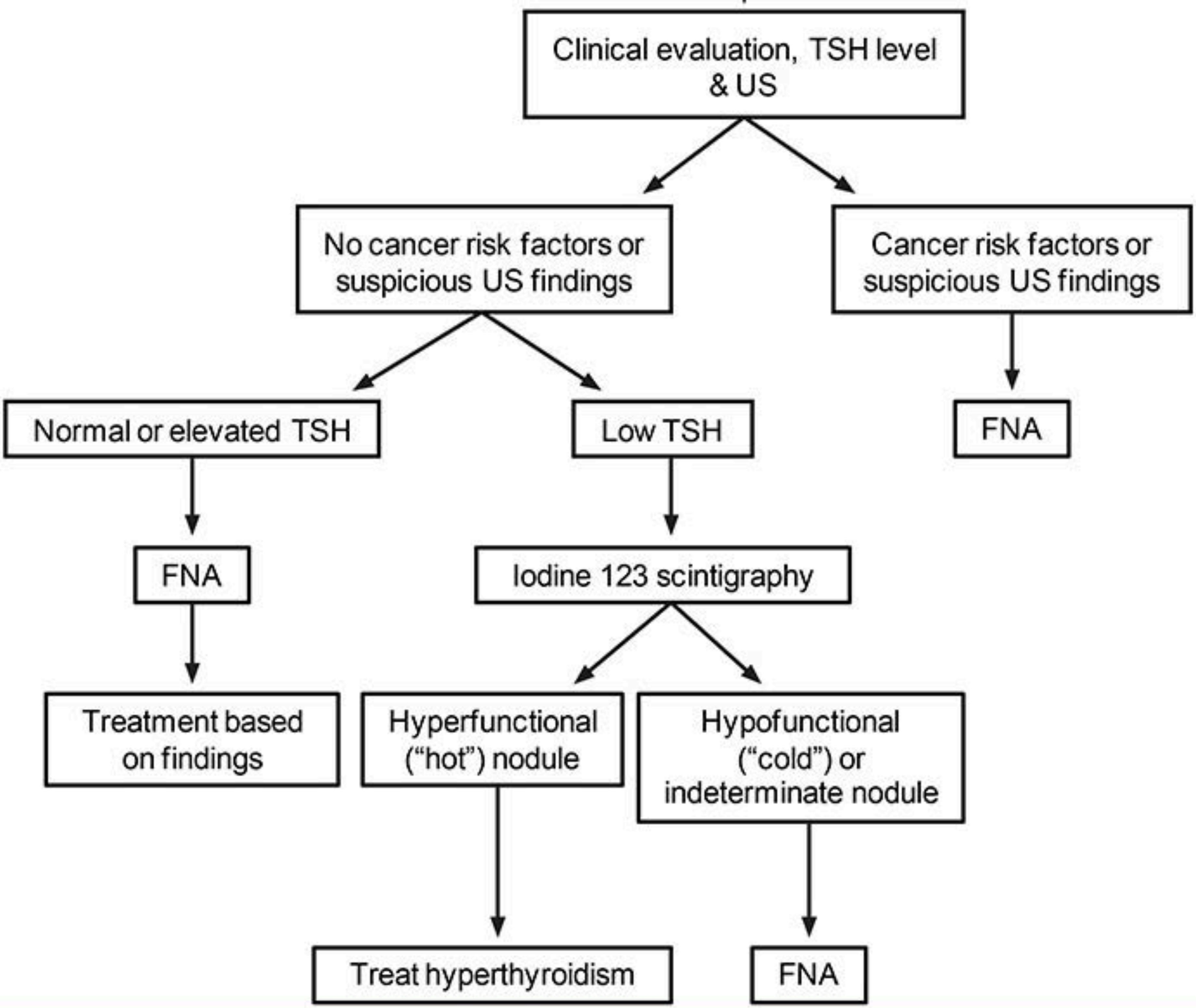
Clinical features of acute opioid intoxication

Signs & symptoms	• **Decreased mental status** • **Miosis** • **Decreased respiratory rate** & shallow breaths • Bradycardia • **Decreased bowel sounds** • Hypothermia (or normothermia)
Workup	• Arterial blood gas (**respiratory acidosis**) • Fingerstick blood glucose (hypoglycemia) • Evaluate for presence of other drugs (eg, acetaminophen) • ECG for prolonged QTc with methadone overdose
Treatment	• **Naloxone**, may need repeated doses • Airway management & ventilation • Consider continuous cardiac monitoring (if QTc >500 msec)

Changes in maternal thyroid axis during pregnancy	

TSH	• Low/suppressed during 1st trimester due to thyroid-stimulating actions of β-hCG
	• May have initial mild hyperthyroid state
	• Pregnancy reference range for TSH:
	  • 1st trimester: 0.1-2.5 μU/mL
	  • 2nd trimester: 0.2-3.0 μU/mL
	  • 3rd trimester: 0.3-3.0 μU/mL

Total T_4	• ↑ Total T_4 levels (1.5x prepregnancy state) due to ↑ thyroxine-binding globulin
Free T_4	• Free T_4 tends to be unreliably low due to assay artifact; pregnancy-specific reference range has not been established • Measurement of **total** T_4 is preferred over free T_4


Clinical evaluation, TSH level & US
No cancer risk factors or suspicious US findings
Cancer risk factors or suspicious US findings
Normal or elevated TSH
Low TSH
FNA
FNA
Iodine 123 scintigraphy
Treatment based on findings
Hyperfunctional ("hot") nodule
Hypofunctional ("cold") or indeterminate nodule
Treat hyperthyroidism
FNA

Classification of multiple endocrine neoplasia (MEN)

Type I	• Primary hyperparathyroidism (>90%) • Enteropancreatic tumors (60%-70%) • Pituitary tumors (10%-20%)
Type 2A	• MTC (>90%) • Pheochromocytoma (40%-50%) • Parathyroid hyperplasia (10%-20%)
Type 2B	• MTC • Pheochromocytoma • Other ◦ Mucosal & intestinal neuromas ◦ Marfanoid habitus

Rabies prophylaxis guidelines

Status	Recommendation
Pre-exposure prophylaxis	• Rabies vaccine on days 0, 7 & 21 or 28
Post-exposure prophylaxis, previously unvaccinated	• Rabies vaccine on days 0, 3, 7 & 14 • Rabies immunoglobulin on day 0
Post-exposure prophylaxis, previously vaccinated	• Rabies vaccine on days 0 & 3

Clinical features of acute limb ischemia

	Viable limb (no tissue loss)	**Threatened limb** (Risk of tissue loss)	**Nonviable limb** (Permanent tissue damage)
Pain	Mild	Severe	Variable
Sensory/motor deficit	None	Mild/partial	Severe/complete
Capillary refill	Intact	Delayed	Absent
Arterial Doppler	Audible	**Inaudible**	**Inaudible**
Venous Doppler	Audible	Audible	**Inaudible**
Management	**Catheter-based or surgical revascularization**	**Emergency surgical revascularization**	**Amputation**

Antithrombotic therapy in patients with mechanical heart valves	
Aspirin	• 75-100 mg/day (in addition to warfarin) in all patients with aortic valve replacement or mitral valve replacement • 75-325 mg/day in patients who cannot take warfarin
Warfarin goal INR 2.0-3.0	• Aortic valve replacement if no risk factors are present*
Warfarin goal INR 2.5-3.5	• Mitral valve replacement • Aortic valve replacement with presence of risk factors • In the first 3 months after aortic valve replacement (weak recommendation)

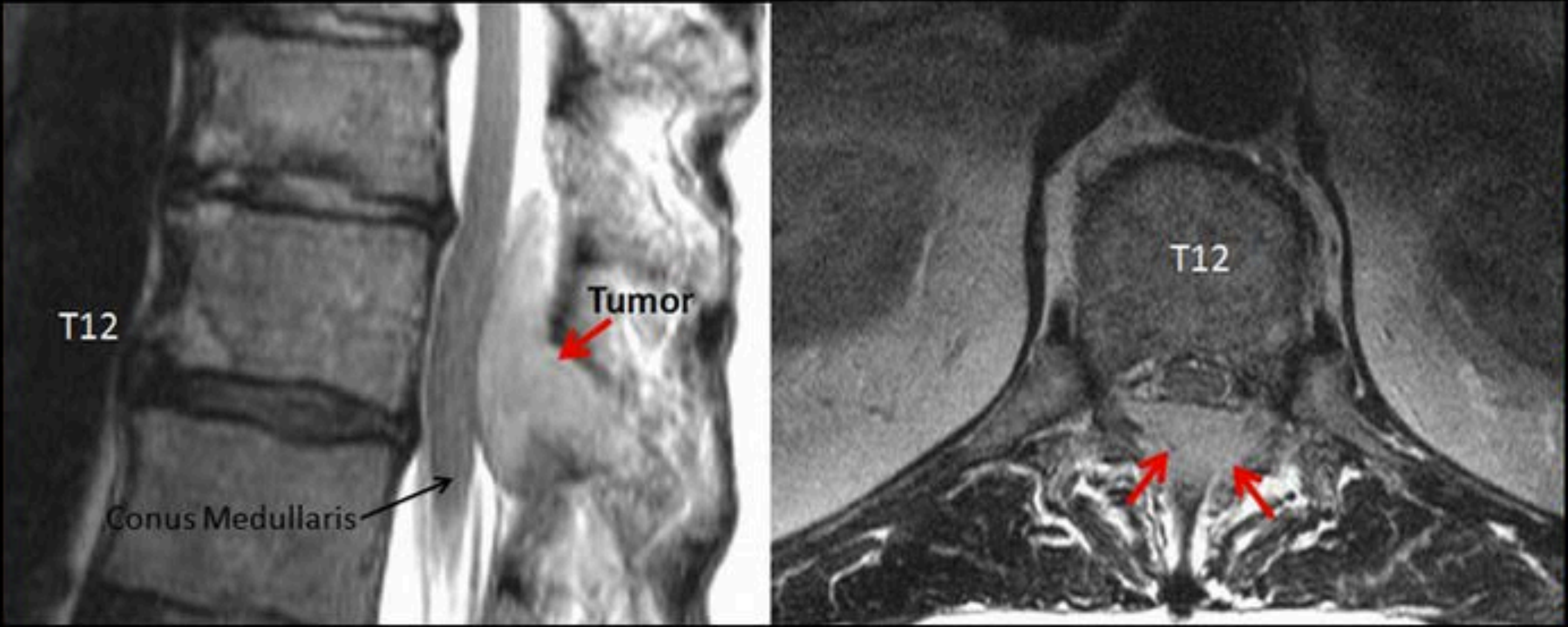
*Risk factors include atrial fibrillation, severe left ventricular dysfunction (ejection fraction ≤30%), prior thromboembolism, or presence of hypercoagulable state

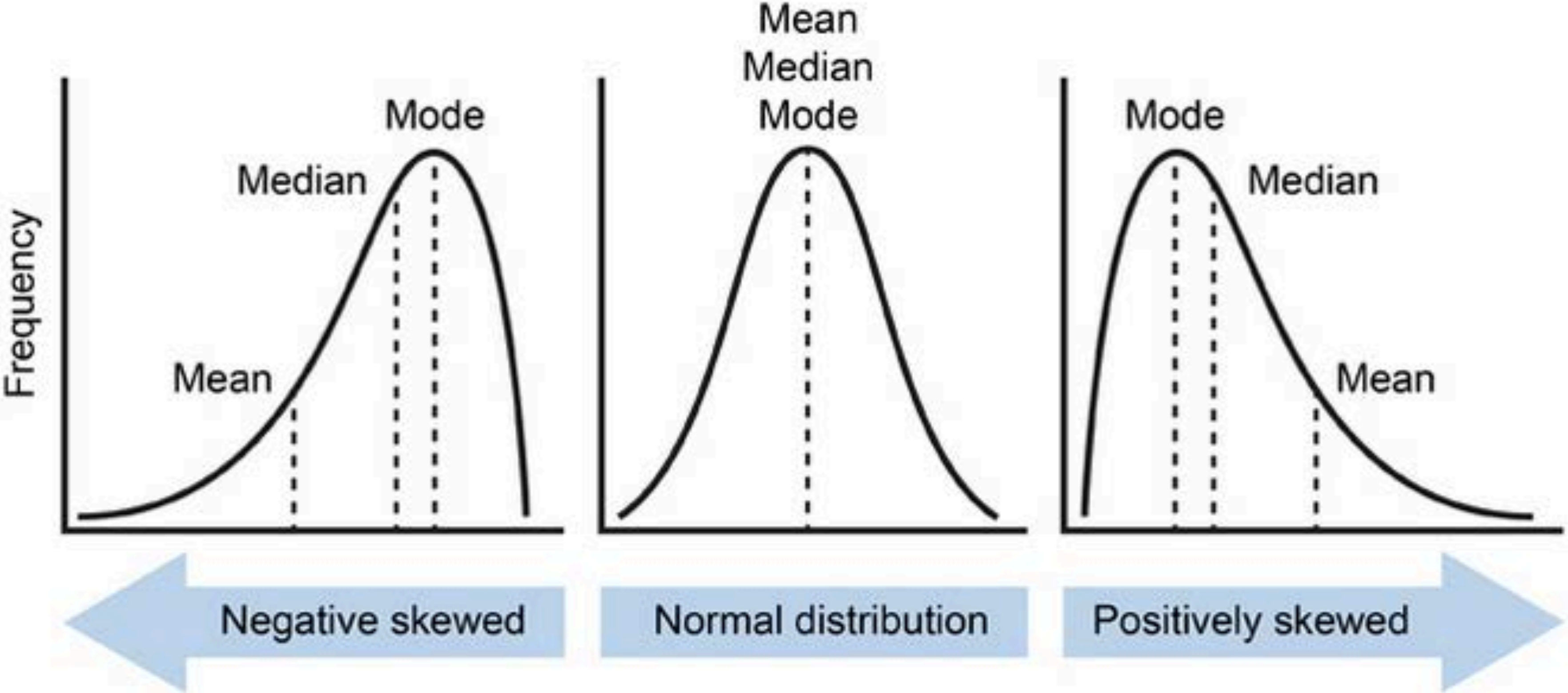
Clinical features of carpal tunnel syndrome	
Risk factors	• **Most common:** Diabetes, rheumatoid arthritis, hypothyroidism • **Others:** Wrist trauma, end-stage renal disease, obesity, pregnancy, acromegaly, menopause
Clinical presentation	• Pain & paresthesias in median nerve distribution (first 3 ½ digits) ∘ Can involve entire hand or radiate proximally to forearm ∘ Worse at night & can awaken patient from sleep ∘ Sometimes improved with flicking of wrist (flick sign) or warm running water ∘ Provoked by flexing or extending wrist or raising arms (eg, typing, driving) • Positive Phalen & Tinel tests • More severe disease symptoms: weakness of thumb abduction & opposition, or atrophy of the thenar eminence
Treatment	• Nocturnal wrist splinting • Corticosteroid joint injections (or oral steroids) if splints fail • Surgery for patients experiencing motor weakness/atrophy of the thenar eminence or refractory to above treatments

Essentials of patient handoffs

Type of information	Examples
Patient demographics	Age, name, medical record, allergies
Clinical status	Current medical problems, vital signs
Care plan	Brief summary of hospitalization, current treatments, anticipated discharge
Anticipated problems & course of action	"Consider diltiazem in case of recurrence of atrial fibrillation with rapid ventricular response."
Pending actions & follow-up	Follow-up on pending laboratory or radiology studies

MRI - Dorsal Epidural Tumor


T12
Tumor
Conus Medullaris
T12


Frequency
Mode
Median
Mean
Mean
Median
Mode
Mode
Median
Mean
Negative skewed
Normal distribution
Positively skewed

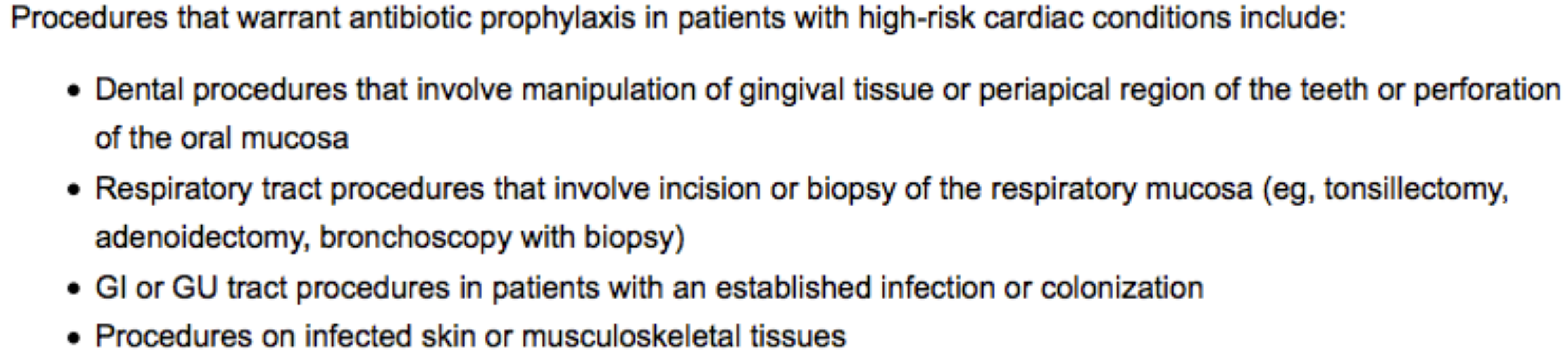
Recommendations for lung cancer screening	
Recommended test	• Low-dose chest CT
Recommended interval	• Yearly
Age for screening	• 55-80
Eligibility for screening based on smoking history	• Patient has ≥30-pack-year smoking history **AND** • Patient is a current smoker or quit smoking within the last 15 years
Termination of screening	• Age >80 **OR** • Patient successfully quit smoking for ≥15 years **OR** • Patient has other medical problems that significantly limit life expectancy or ability/willingness to undergo lung cancer surgery

Discharge against medical advice (AMA)

- Discuss specific benefits/risks of proposed treatment & alternatives
- Discuss specific risks of refusing treatment
- Assess decision-making capacity
    - Understands proposed treatment
    - Understands risks of refusing treatment
    - Demonstrates a reasoned basis for leaving AMA
- Discuss follow-up care & option to return to emergency department
- Notify primary physician, family
- Document in medical record

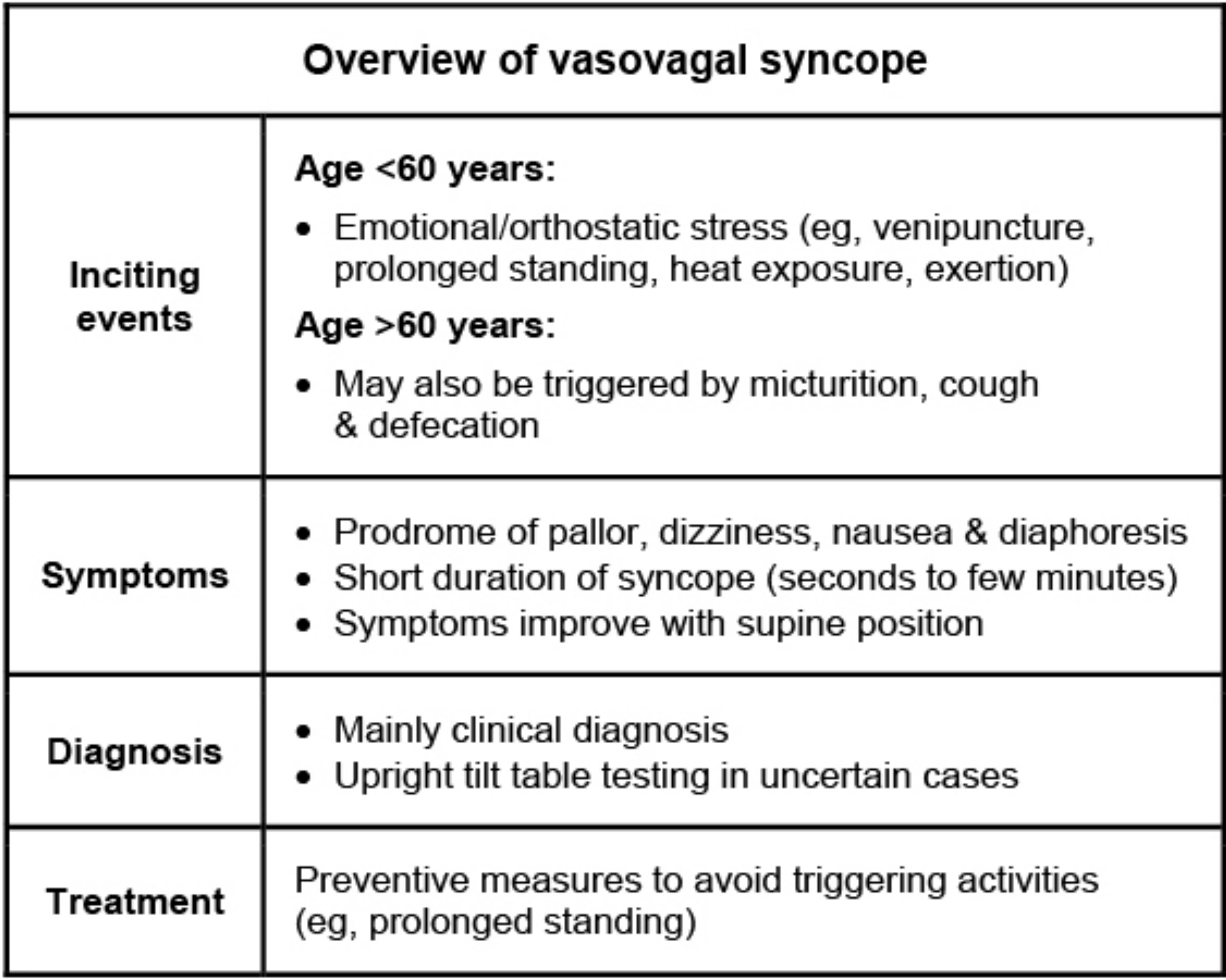
Bacterial endocarditis prophylaxis	
Patients at risk	• Prosthetic valves • History of endocarditis • Unrepaired cyanotic CHD • Repaired CHD using prosthetic material in the first 6 months after the procedure • Repaired CHD with residual defects • Heart transplant with valvular disease
High-risk procedures	• Dental manipulation of gingival tissue or periapical region of teeth or perforation of oral mucosa • Respiratory tract procedures with incision or biopsy • Procedures in patients with ongoing gastrointestinal/genitourinary (GI/GU) tract infection or infected skin or musculoskeletal tissue • Cardiac surgery
Low-risk procedures, NO prophylaxis	• GI procedures (eg, endoscopic retrograde cholangiopancreatography, esophagogastroduodenoscopy) • GU procedures (eg, prostatectomy, catheter insertions) • Vaginal or cesarean delivery

High-risk procedures	• Dental manipulation of gingival tissue or periapical region of teeth or perforation of oral mucosa • Respiratory tract procedures with incision or biopsy • Procedures in patients with ongoing gastrointestinal/genitourinary (GI/GU) tract infection or infected skin or musculoskeletal tissue • Cardiac surgery
Low-risk procedures, NO prophylaxis	• GI procedures (eg, endoscopic retrograde cholangiopancreatography, esophagogastroduodenoscopy) • GU procedures (eg, prostatectomy, catheter insertions) • Vaginal or cesarean delivery
Prophylaxis	• **Dental/respiratory prophylaxis** ◦ Oral: Amoxicillin, cephalexin, clindamycin, or azithromycin ◦ Intravenous: Ampicillin, ceftriaxone, or clindamycin • **GI/GU prophylaxis (*Enterococcus*)**: Amoxicillin, ampicillin, or vancomycin • **Skin/musculoskeletal tissue prophylaxis (*Staphylococcus* & *Streptococcus*):** Vancomycin or clindamycin for suspected methicillin-resistant *S aureus*



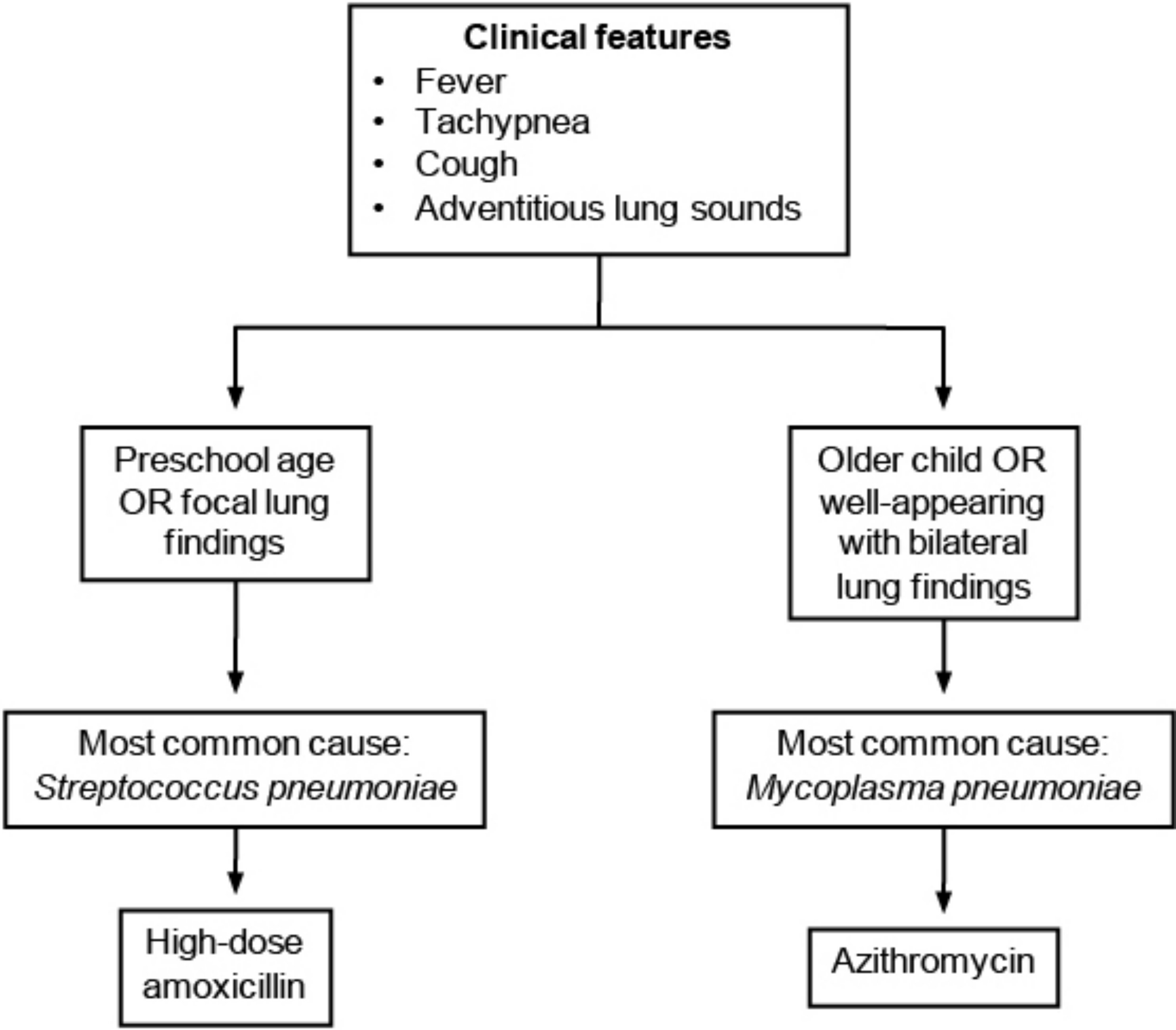
Procedures that warrant antibiotic prophylaxis in patients with high-risk cardiac conditions include:

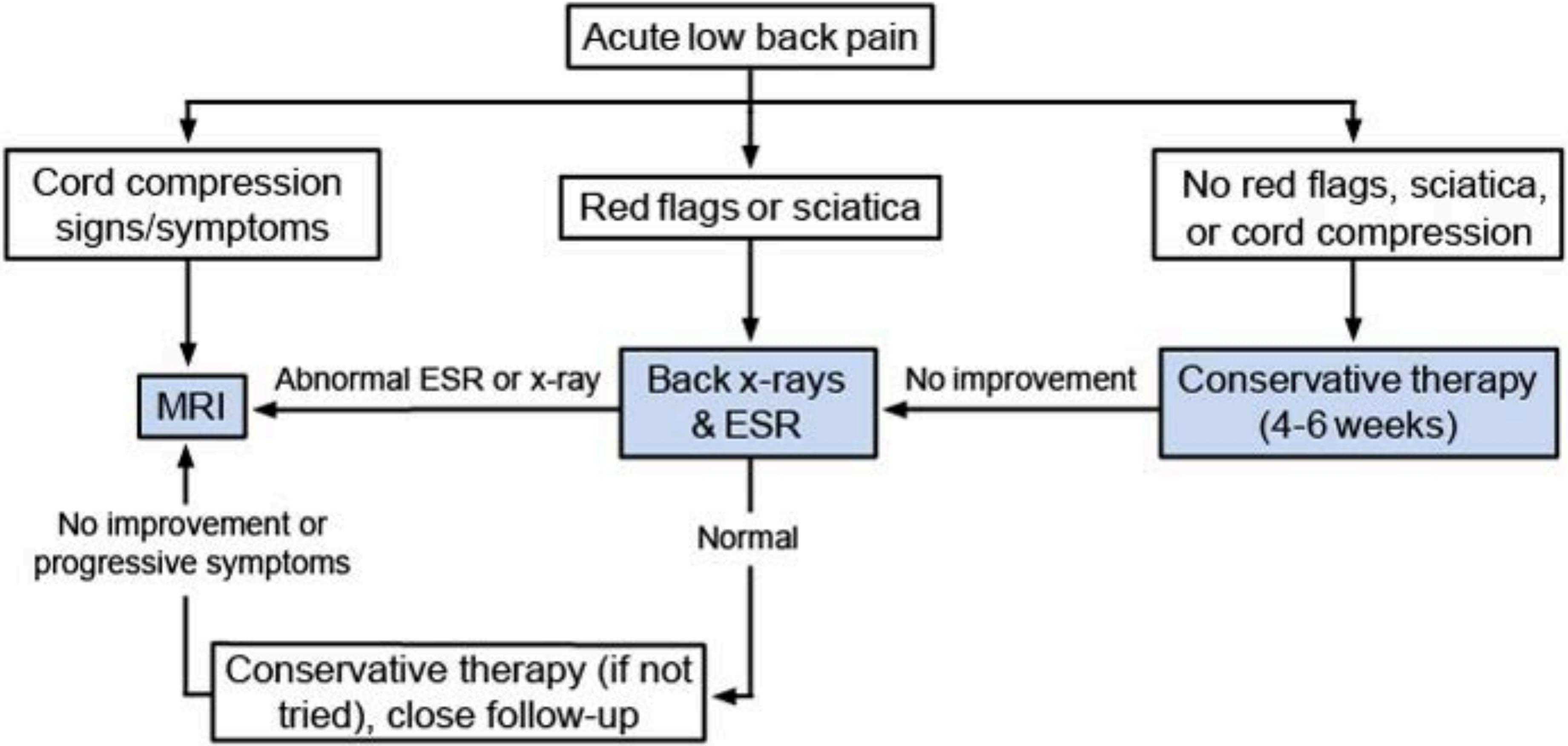
- Dental procedures that involve manipulation of gingival tissue or periapical region of the teeth or perforation of the oral mucosa
- Respiratory tract procedures that involve incision or biopsy of the respiratory mucosa (eg, tonsillectomy, adenoidectomy, bronchoscopy with biopsy)
- GI or GU tract procedures in patients with an established infection or colonization
- Procedures on infected skin or musculoskeletal tissues



Overview of vasovagal syncope	
Inciting events	**Age <60 years:** • Emotional/orthostatic stress (eg, venipuncture, prolonged standing, heat exposure, exertion) **Age >60 years:** • May also be triggered by micturition, cough & defecation
Symptoms	• Prodrome of pallor, dizziness, nausea & diaphoresis • Short duration of syncope (seconds to few minutes) • Symptoms improve with supine position
Diagnosis	• Mainly clinical diagnosis • Upright tilt table testing in uncertain cases
Treatment	Preventive measures to avoid triggering activities (eg, prolonged standing)

Management of uncomplicated pediatric pneumonia


Clinical features
Fever
Tachypnea
Cough
Adventitious lung sounds
Preschool age OR focal lung findings
Older child OR well-appearing with bilateral lung findings
Most common cause: Streptococcus pneumoniae
Most common cause: Mycoplasma pneumoniae
High-dose amoxicillin
Azithromycin


Acute low back pain
Cord compression signs/symptoms
Red flags or sciatica
No red flags, sciatica, or cord compression
MRI
Abnormal ESR or x-ray
Back x-rays & ESR
No improvement
Conservative therapy (4-6 weeks)
No improvement or progressive symptoms
Normal
Conservative therapy (if not tried), close follow-up

Red flags

- Age >50
- Nighttime pain
- Constitutional symptoms
- History of malignancy
- Trauma
- IV drug use
- Infectious risk
- >1 month with no improvement

Common bacterial pathogens in cystic fibrosis-related pneumonia

Gram-negative rod	• *Pseudomonas aeruginosa* • *Burkholderia cepacia complex (eg, B dolosa)* • *Stenotrophomonas maltophilia*
Gram-negative coccobacilli	• Nontypeable *Haemophilus influenzae*
Gram-positive cocci in chains	• *Streptococcus pneumoniae*
Gram-positive cocci in clusters	• *Staphylococcus aureus*

the treatment of *P aeruginosa* in CF as **drug resistance** develops so rapidly in this population. The preferred intravenous regimen for treating *P aeruginosa* includes:

- Tobramycin (an aminoglycoside) PLUS
- Anti-pseudomonal semisynthetic penicillin (eg, ticarcillin-clavulanate, piperacillin-tazobactam) OR a 3rd- or 4th-generation cephalosporin (eg, ceftazidime, cefepime) OR a carbapenem (eg, meropenem, imipenem/cilastatin)

Criteria for acute respiratory distress syndrome

- New or worsening respiratory symptoms during past week or within 1 week of known clinical insult
- Bilateral lung opacities on imaging consistent with pulmonary edema
- No signs of cardiac failure or fluid overload
- Objective assessment (eg, echocardiography) to definitively exclude hydrostatic pulmonary edema in patients without ARDS risk factors
- Severity of hypoxemia as defined by PaO_2/FiO_2 ratio (PF) ≤300 mm HG with PEEP ≥5 cm H_2O
  - **Mild:** PF 200-300 mm HG
  - **Moderate:** PF 100-200 mm Hg
  - **Severe:** PF ≤100 mm Hg

Approach for LTVV in ARDS/ALI

- Volume assist-control mode
- Initially at 8 mL/kg predicted weight, reduced to 7 mL/kg and then to 6 mL/kg over 1-3 hours
- Ventilator rate ≤ 35 breaths/min to equal baseline minute ventilation
- Plateau pressure goal ≤ 30 cm H_2O
- Adjust inspiratory plateau pressure with 0.5 second inspiratory pause every 4 hours or change in PEEP or tidal volume
- Goal PaO2 is 55-80 mm Hg or SpO2 88-95%
- PEEP applied based on FiO_2

Mechanical ventilation in acute respiratory distress syndrome (ARDS) is managed with low tidal volumes (8 mL/kg of ideal body weight or less) to achieve plateau pressure <30 cm H_2O and arterial oxygen concentration of 55-80 mm Hg. High positive end-expiratory pressure can help recruit more alveoli and improve oxygenation, and is likely more advantageous in moderate-to-severe ARDS.

Guidelines for lipid-lowering therapy

Indication	Recommended therapy
Clinically significant atherosclerotic disease • ACS, MI • Stable or unstable angina • Coronary or other arterial revascularization • Stroke, TIA, PAD	• **Age ≤75:** High-intensity statin • **Age >75:** Moderate-intensity statin
LDL ≥190 mg/dL	**High-intensity statin**
Age 40-75 with diabetes	• **10-year ASCVD risk ≥7.5%:** High-intensity statin • **10-year ASCVD risk <7.5%:** Moderate-intensity statin
Estimated 10-year ASCVD risk ≥7.5% (Pooled Cohort Equations)	Moderate- to high-intensity statin*

ACS = Acute coronary syndrome; **ASCVD** = atherosclerotic cardiovascular disease; **MI** = myocardial infarction; **PAD** = peripheral arterial disease; **TIA** = transient ischemic attack.

* High-intensity statins include atorvastatin 40-80 mg, rosuvastatin 20-40 mg; moderate-intensity statins include atorvastatin 10-20 mg, rosuvastatin 5-10 mg, simvastatin 20-40 mg, pravastatin 40-80 mg, lovastatin 40 mg.

Treatment of hypertension

Modification	Recommended plan	Approximate ↓ systolic BP (mm Hg)
Weight loss	Reduce BMI <25 kg/m^2	5-20 per 10 kg loss
DASH diet	Diet high in fruits and vegetables and low in saturated fat and total fat	8-14
Exercise	30 minutes/day for 5-6 days/week	4-9
Dietary sodium	<3 g/day	2-8
Alcohol intake	2 drinks/day in men and 1 drink/day in women	2-4

Common etiologies of hyperthyroidism

Etiology	Goiter	RAIU	Distinguishing clinical features
Graves' disease	Yes	↑	Exophthalmos
Subacute thyroiditis	Yes	↓	Painful thyroid, possible fever
Painless thyroiditis	Possible	↓	Possible hypothyroid phase
Hashimoto thyroiditis	Maybe	Normal	Likely hypothyroid phase
Toxic nodular goiter	Single nodule	Normal or ↑ in nodule	Palpable thyroid nodule
Toxic multinodular goiter	Yes	Normal or ↑	Possible gradual onset of obstructive symptoms (eg, cough, dysphagia, dyspnea)
TSH-secreting adenoma	Yes	↑	Increased TSH & T3/T4
Iatrogenic/factitious	No	↓	Usually ↓ TSH with ↑ T4, normal T3

Prenatal, intrapartum & postnatal management of HIV infection

Prenatal	• Test HIV-1 viral load monthly until undetectable, then every 3 months
	• CD4 cell count every 3 months
	• Resistance testing if not previously obtained
	• Initiate 3-drug HAART*
	    ◦ Dual NRTI
	    PLUS
	    ◦ NNRTI **OR** protease inhibitor
	• Prophylaxis against opportunistic infections if CD4 cell count <200/µL
	• Avoid amniocentesis until viral load is undetectable

Intrapartum	• Rapid HIV testing if not previously performed • Avoid artificial ROM, fetal scalp electrode & instrumentation (eg, vacuum, forceps) • If mother not on HAART: Zidovudine • If viral load >1,000 copies/mL: Zidovudine & perform C-section
Postnatal	• Maternal: Continue HAART • Infant: Zidovudine for ≥6 weeks PLUS serial HIV PCR testing

*During 3rd trimester, HAART can be initiated before resistance testing is complete

Contraindications to breastfeeding	
Maternal	• Active untreated tuberculosis (mothers may start breastfeeding 2 weeks after anti-tuberculin therapy) • Maternal HIV infection (in developed countries where formula is readily available) • Herpetic breast lesions • Varicella infection <5 days before or 2 days after delivery • Chemotherapy or ongoing radiation therapy • Active abuse of alcohol or drugs
Infant	• Galactosemia

Manifestations of sarcoidosis

Pulmonary	• Bilateral hilar adenopathy • Interstitial infiltrates
Ophthalmologic	• Anterior uveitis (iridocyclitis or iritis) • Posterior uveitis
Reticuloendothelial	• Peripheral lymphadenopathy • Hepatomegaly • Splenomegaly
Musculoskeletal	• Acute polyarthritis (especially the ankle joints) • Chronic arthritis with periosteal bone resorption
Central nervous system/endocrine	• Central diabetes insipidus • Hypercalcemia
Lofgren's syndrome	• Erythema nodosum • Hilar adenopathy • Migratory polyarthralgias • Fever

Active cardiac conditions that increase perioperative cardiovascular risk	
Require further evaluation & treatment before noncardiac surgery	• Unstable coronary syndrome ○ Unstable angina or recent MI • Decompensated CHF • Significant arrhythmias ○ Symptomatic bradycardia or high-grade AV block ○ Symptomatic ventricular arrhythmia ○ New-onset ventricular tachycardia ○ Supraventricular arrhythmia with rapid rates >100/min • Severe valvular disease ○ Severe aortic stenosis ○ Symptomatic mitral stenosis

AV = atrioventricular; **CHF** = congestive heart failure; **MI** = myocardial infarction.

Clinical features of Wallenberg syndrome

Vestibulocerebellar symptoms	• **Vertigo**, falling to the side of the lesion • Difficulty sitting upright without support • Diplopia & **nystagmus** (horizontal & vertical) • Ipsilateral limb ataxia
Sensory symptoms	• Abnormal facial sensation or pain (early symptom) • Loss of pain & temperature in **ipsilateral** face & **contralateral** trunk & limbs
Ipsilateral bulbar muscle weakness	• Dysphagia & aspiration • Dysarthria, dysphonia & **hoarseness** (ipsilateral vocal cord paralysis)
Autonomic dysfunction	• Ipsilateral **Horner's syndrome** (miosis, ptosis & anhidrosis) • Intractable hiccups • Lack of automatic respiration (especially during sleep)

Common contraception side effects

Method	Side effects
Combined hormonal contraceptives (pills, patch, ring)	• All: Breakthrough bleeding, breast tenderness • Patch: Skin irritation & rash at application site • Ring: Vaginal irritation or discharge
DMPA	• Initial irregular bleeding • Short-term, reversible bone mineral density loss • +/- Delayed return to fertility • +/- Weight gain
Progestin implant	Irregular, unpredictable bleeding
Progestin IUD	Initial irregular bleeding & cramps
Copper IUD	Longer or heavier menses

Preventing neonatal group B *Streptococcus* infection	
Universal screening	• Rectovaginal culture at 35-37 weeks gestation
Indications	• Prior birth to an infant affected with early-onset GBS disease • GBS bacteriuria or GBS urinary tract infection anytime during current pregnancy (regardless of treatment) • GBS positive within 5 weeks of labor • Unknown GBS status PLUS 1 of the following: ○ <37 weeks gestation ○ Intrapartum fever ○ Rupture of amniotic membranes for ≥18 hours
Prophylaxis	First-line treatment = penicillin

GBS = group B *Streptococcus*.

Respiratory failure in asthma & chronic obstructive pulmonary disease	
Signs & symptoms	• Sustained tachypnea • Absent/minimal wheezing (silent chest) • Decreased mental status • Paradoxical movement of chest & abdomen • Cyanosis
Laboratory parameters	• Worsening hypoxemia • Worsening hypercapnia (relative to baseline) • Severe respiratory acidosis

Inadequately controlled asthma during pregnancy is associated with poor pregnancy outcomes. In an acute asthma exacerbation, $PaCO_2$ >35 mm Hg suggests developing respiratory compromise. Management of exacerbation should be similar to that of nonpregnant patients with inhaled bronchodilators, systemic corticosteroids, and mechanical ventilation (if needed).

FOOSH: Fall on an outstretched hand

- **Scaphoid fracture**
- Wrist sprain
- **Distal radius (Colles’) fracture**
- **Ulnar styloid fracture**
- Acute carpal tunnel syndrome
- Radial head fracture
- Olecranon fracture
- Supracondylar humerus fracture
- Acromioclavicular separation
- Posterior glenohumeral dislocation

Clinical features of meniscus & knee ligament injuries	
Meniscus	• Acute or subacute symptoms • **Small effusion** • **Locking** sensation with extension • Inability to fully extend • Joint line tenderness • Positive McMurray test
Cruciate ligaments	• Acute "pop" with rapid-onset, **large effusion**/hemarthrosis • **Anterior cruciate**: Anterior drawer & Lachman tests • Posterior cruciate (uncommon): Posterior drawer test
Collateral ligaments	• Effusion uncommon • **Medial collateral**: Instability with lateral movement, valgus laxity • **Lateral collateral**: Instability with medial movement, varus laxity

Detection of left-to right shunt by oximetry

Level of shunt	**Location of step-up in O_2% saturation**	**Possible etiology**
Atrial	Superior/inferior vena cava to right atrium	• **Atrial septal defect** • Partial anomalous pulmonary venous drainage • Ruptured sinus of Valsalva • VSD with tricuspid regurgitation • Coronary fistula to right atrium
Ventricular	Right atrium to right ventricle	• **VSD** • PDA with pulmonic regurgitation • Coronary fistula to right ventricle
Great vessels	Right ventricle to pulmonary artery	• **PDA** • Aorto-pulmonary window

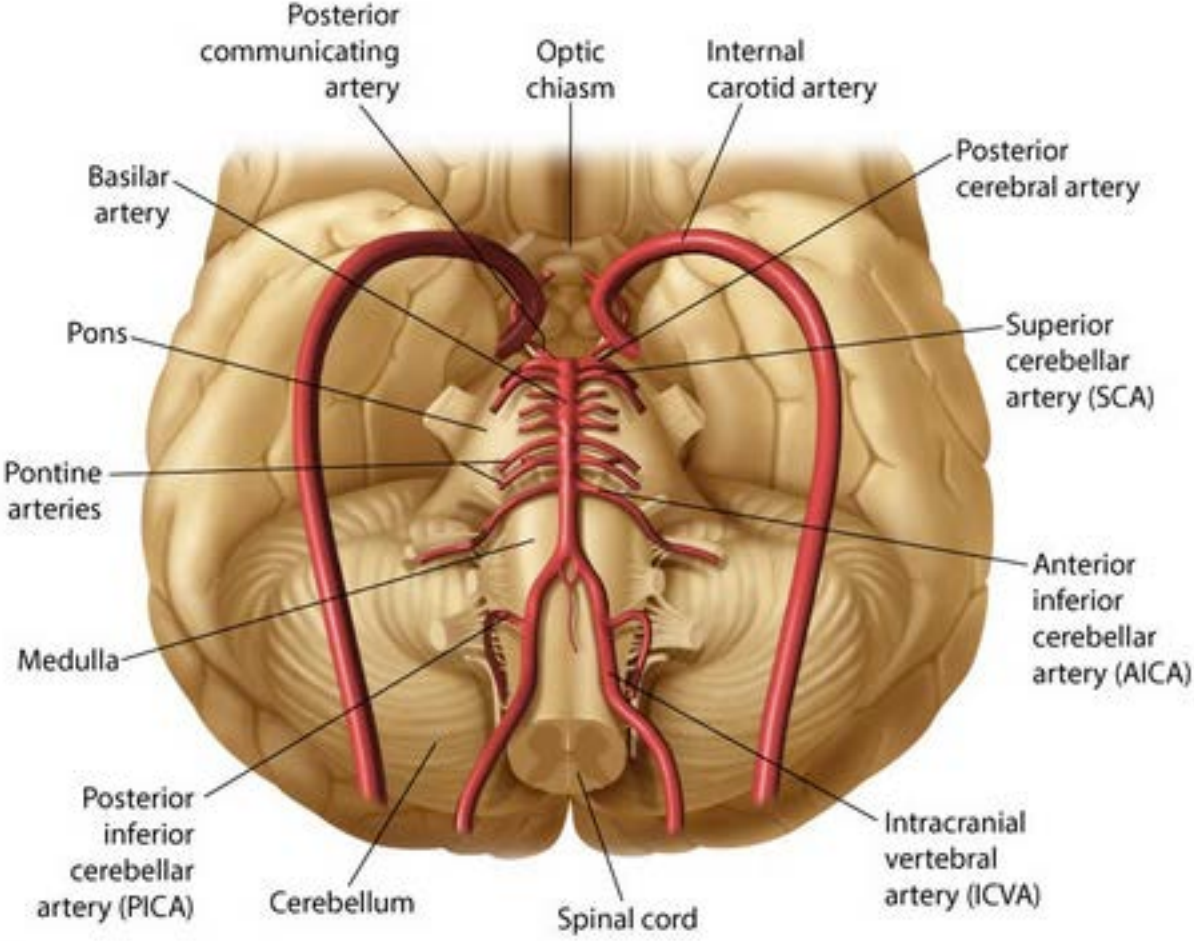
Clinical features & management of tricyclic antidepressant overdose		
Clinical presentation	**Central nervous system**	• Mental status changes (eg, drowsiness, delirium, coma) • Seizures, respiratory depression
	Cardiovascular	• Sinus tachycardia, hypotension • Prolonged PR/QRS/QT intervals • Arrhythmias (eg, ventricular tachycardia, fibrillation)
	Anticholinergic	• Dry mouth, blurred vision, dilated pupils • Urinary retention, flushing, hyperthermia
Management	**Supportive care & therapy**	• Supplemental oxygen, intubation • Intravenous fluids • Activated charcoal for patients within 2 hours of ingestion (unless ileus present) • Intravenous sodium bicarbonate for QRS widening or ventricular arrhythmia

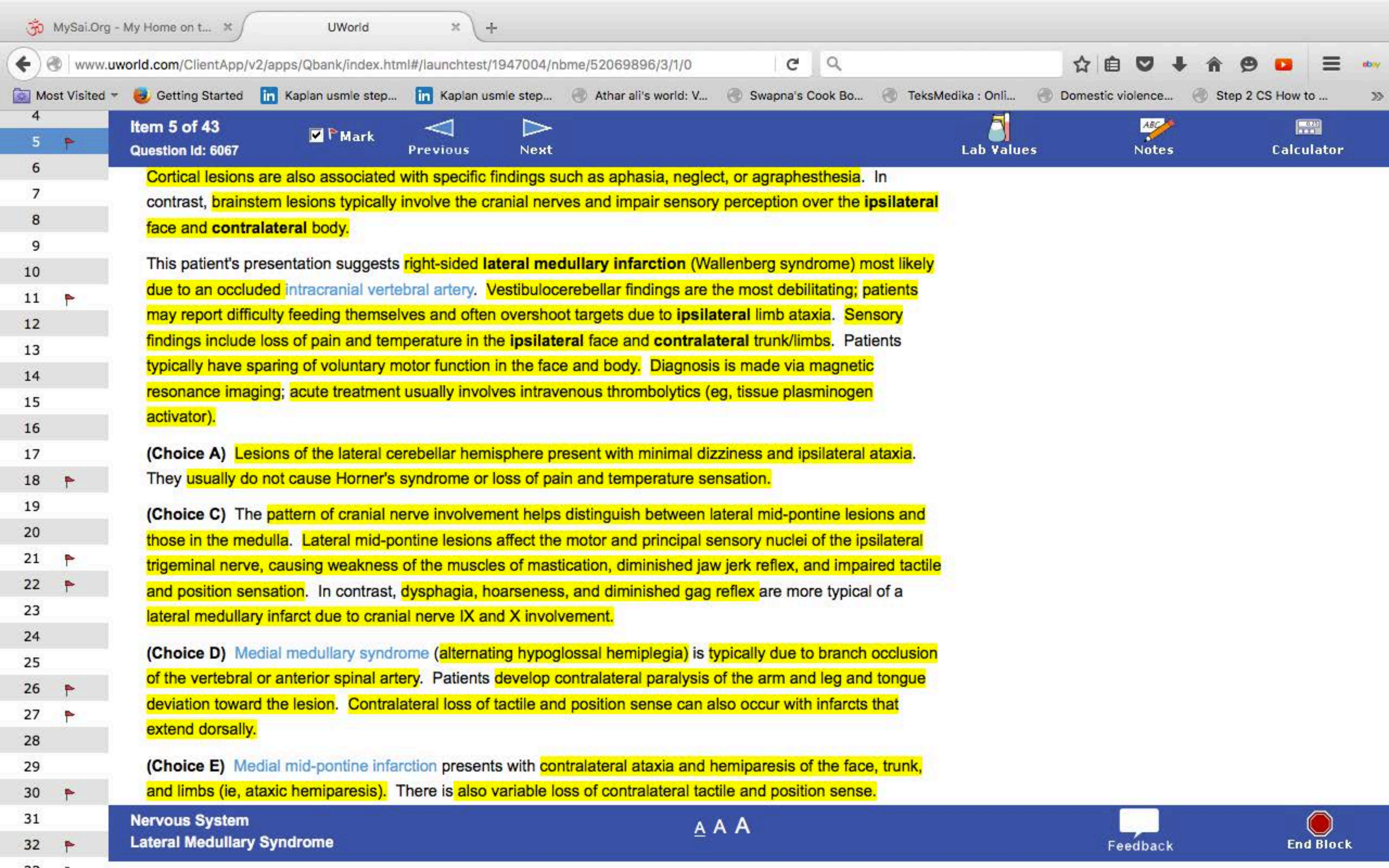
Clinical features of acute decompensated heart failure	
Clinical presentation	• Acute dyspnea, orthopnea, paroxysmal nocturnal dyspnea • Hypertension common; hypotension suggests severe disease • Accessory muscle use, tachycardia, tachypnea • Diffuse crackles with possible wheezes (cardiac asthma) • Possible S3, jugular venous distention, peripheral edema
Treatment	**Normal or elevated blood pressure with adequate end-organ perfusion** • Supplemental oxygen • Intravenous loop diuretic (eg, furosemide) • Consider intravenous vasodilator (eg, nitroglycerin) **Hypotension or signs of shock** • Supplemental oxygen • Intravenous loop diuretic (eg, furosemide) as appropriate • Intravenous vasopressor (eg, norepinephrine)

In patients with positive ELISA-anti-HCV antibodies, there are several potential explanations: persistent hepatitis C infection, cleared infection or false-positive ELISA result. The diagnosis should be confirmed by high-specificity testing (usually HCV RNA). The positive predictive value of ELISA-anti-HCV in a patient with a low risk profile and normal AST/ALT is low.

High yield question

Posterior brain circulation


Posterior communicating artery
Optic chiasm
Internal carotid artery
Basilar artery
Posterior cerebral artery
Pons
Superior cerebellar artery (SCA)
Pontine arteries
Anterior inferior cerebellar artery (AICA)
Medulla
Posterior inferior cerebellar artery (PICA)
Cerebellum
Spinal cord
Intracranial vertebral artery (ICVA)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Nervous System
Lateral Medullary Syndrome
A A A
Feedback
End Block

Cortical lesions are also associated with specific findings such as aphasia, neglect, or agraphesthesia. In contrast, brainstem lesions typically involve the cranial nerves and impair sensory perception over the **ipsilateral** face and **contralateral** body.

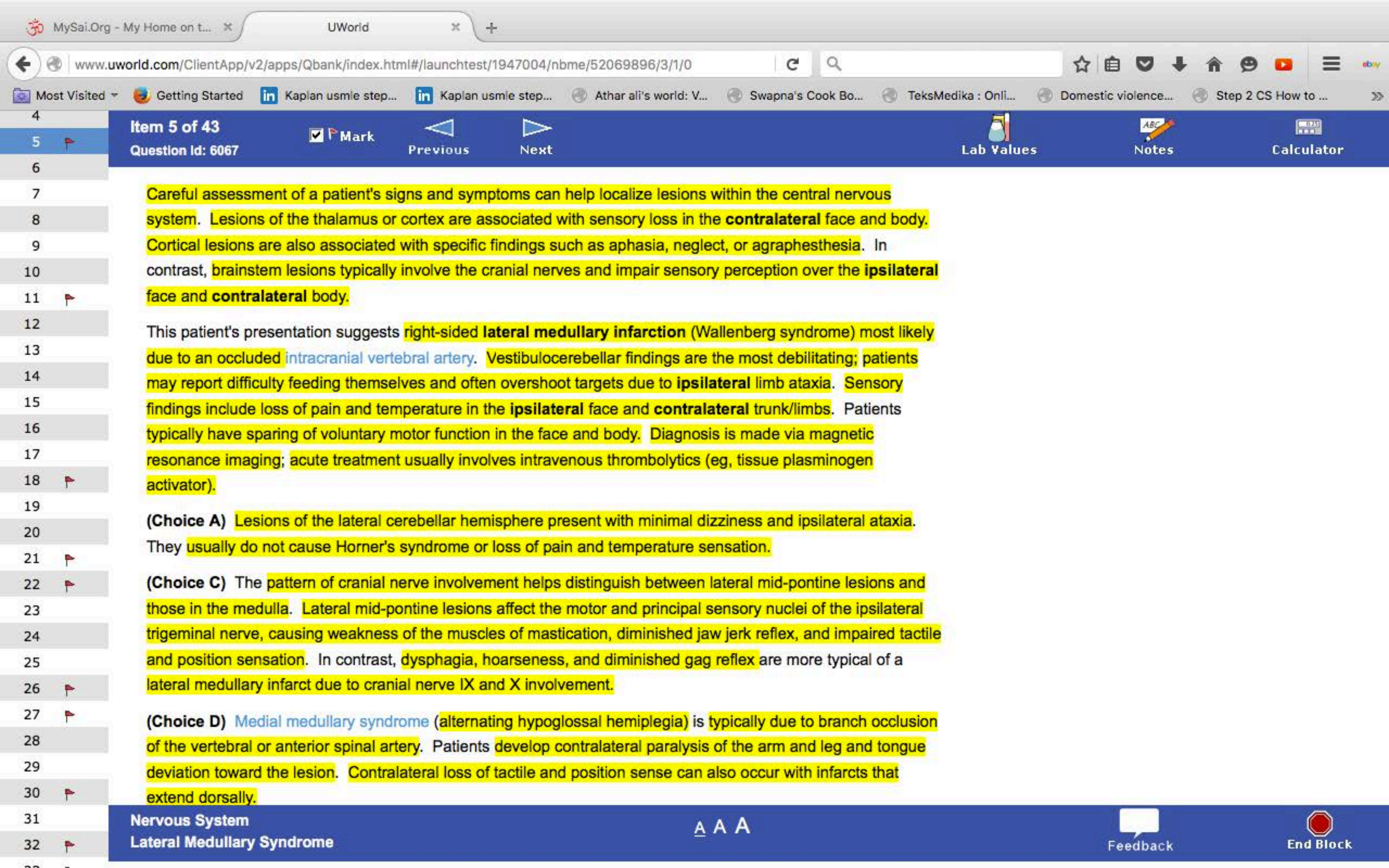
This patient's presentation suggests right-sided **lateral medullary infarction** (Wallenberg syndrome) most likely due to an occluded intracranial vertebral artery. Vestibulocerebellar findings are the most debilitating; patients may report difficulty feeding themselves and often overshoot targets due to **ipsilateral** limb ataxia. Sensory findings include loss of pain and temperature in the **ipsilateral** face and **contralateral** trunk/limbs. Patients typically have sparing of voluntary motor function in the face and body. Diagnosis is made via magnetic resonance imaging; acute treatment usually involves intravenous thrombolytics (eg, tissue plasminogen activator).

(Choice A) Lesions of the lateral cerebellar hemisphere present with minimal dizziness and ipsilateral ataxia. They usually do not cause Horner's syndrome or loss of pain and temperature sensation.

(Choice C) The pattern of cranial nerve involvement helps distinguish between lateral mid-pontine lesions and those in the medulla. Lateral mid-pontine lesions affect the motor and principal sensory nuclei of the ipsilateral trigeminal nerve, causing weakness of the muscles of mastication, diminished jaw jerk reflex, and impaired tactile and position sensation. In contrast, dysphagia, hoarseness, and diminished gag reflex are more typical of a lateral medullary infarct due to cranial nerve IX and X involvement.

(Choice D) Medial medullary syndrome (alternating hypoglossal hemiplegia) is typically due to branch occlusion of the vertebral or anterior spinal artery. Patients develop contralateral paralysis of the arm and leg and tongue deviation toward the lesion. Contralateral loss of tactile and position sense can also occur with infarcts that extend dorsally.

(Choice E) Medial mid-pontine infarction presents with contralateral ataxia and hemiparesis of the face, trunk, and limbs (ie, ataxic hemiparesis). There is also variable loss of contralateral tactile and position sense.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Nervous System
Lateral Medullary Syndrome
A A A
Feedback
End Block

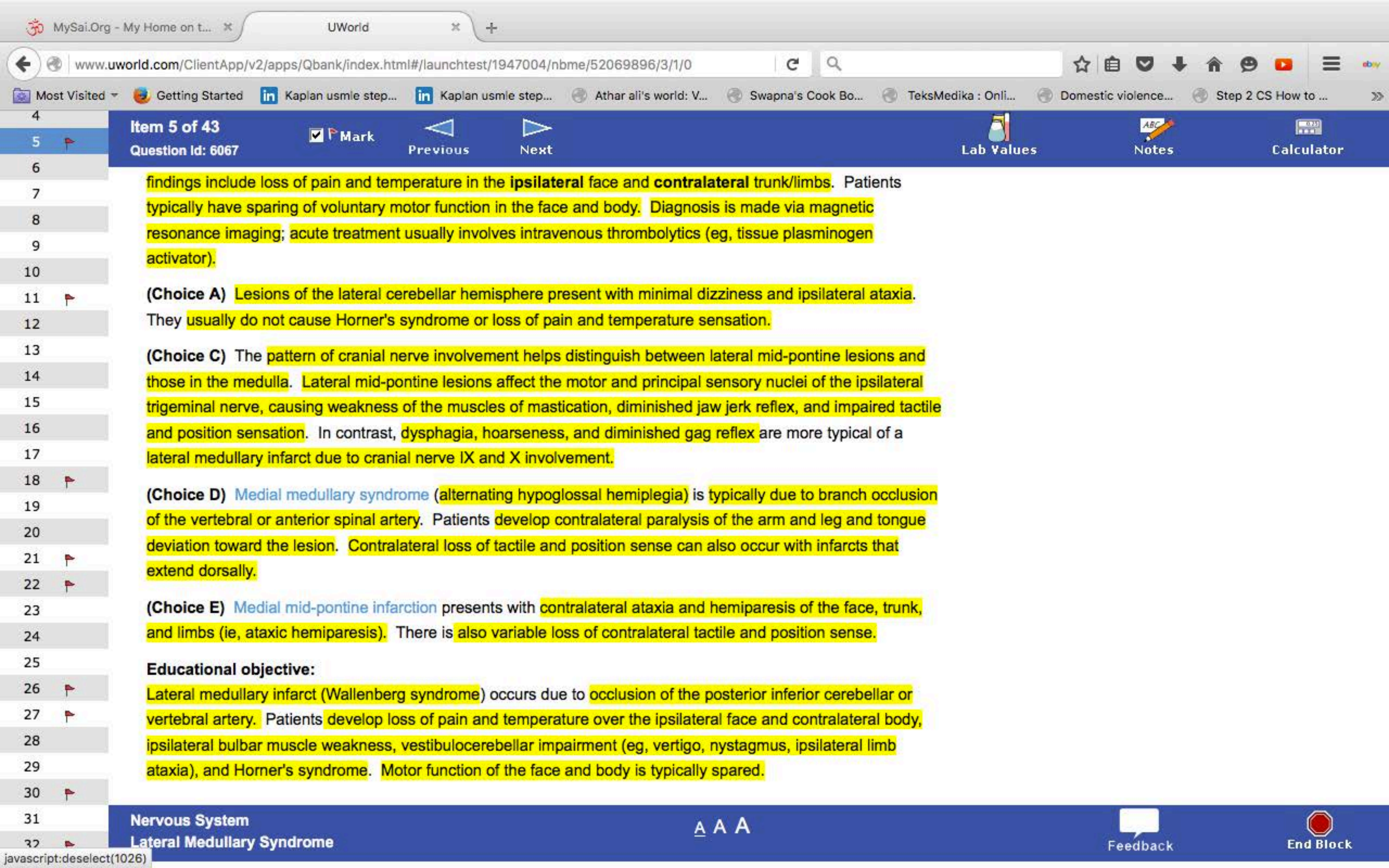
Careful assessment of a patient's signs and symptoms can help localize lesions within the central nervous system. Lesions of the thalamus or cortex are associated with sensory loss in the **contralateral** face and body. Cortical lesions are also associated with specific findings such as aphasia, neglect, or agraphesthesia. In contrast, brainstem lesions typically involve the cranial nerves and impair sensory perception over the **ipsilateral** face and **contralateral** body.

This patient's presentation suggests right-sided **lateral medullary infarction** (Wallenberg syndrome) most likely due to an occluded intracranial vertebral artery. Vestibulocerebellar findings are the most debilitating; patients may report difficulty feeding themselves and often overshoot targets due to **ipsilateral** limb ataxia. Sensory findings include loss of pain and temperature in the **ipsilateral** face and **contralateral** trunk/limbs. Patients typically have sparing of voluntary motor function in the face and body. Diagnosis is made via magnetic resonance imaging; acute treatment usually involves intravenous thrombolytics (eg, tissue plasminogen activator).

(Choice A) Lesions of the lateral cerebellar hemisphere present with minimal dizziness and ipsilateral ataxia. They usually do not cause Horner's syndrome or loss of pain and temperature sensation.

(Choice C) The pattern of cranial nerve involvement helps distinguish between lateral mid-pontine lesions and those in the medulla. Lateral mid-pontine lesions affect the motor and principal sensory nuclei of the ipsilateral trigeminal nerve, causing weakness of the muscles of mastication, diminished jaw jerk reflex, and impaired tactile and position sensation. In contrast, dysphagia, hoarseness, and diminished gag reflex are more typical of a lateral medullary infarct due to cranial nerve IX and X involvement.

(Choice D) Medial medullary syndrome (alternating hypoglossal hemiplegia) is typically due to branch occlusion of the vertebral or anterior spinal artery. Patients develop contralateral paralysis of the arm and leg and tongue deviation toward the lesion. Contralateral loss of tactile and position sense can also occur with infarcts that extend dorsally.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Item 5 of 43
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Nervous System
Lateral Medullary Syndrome
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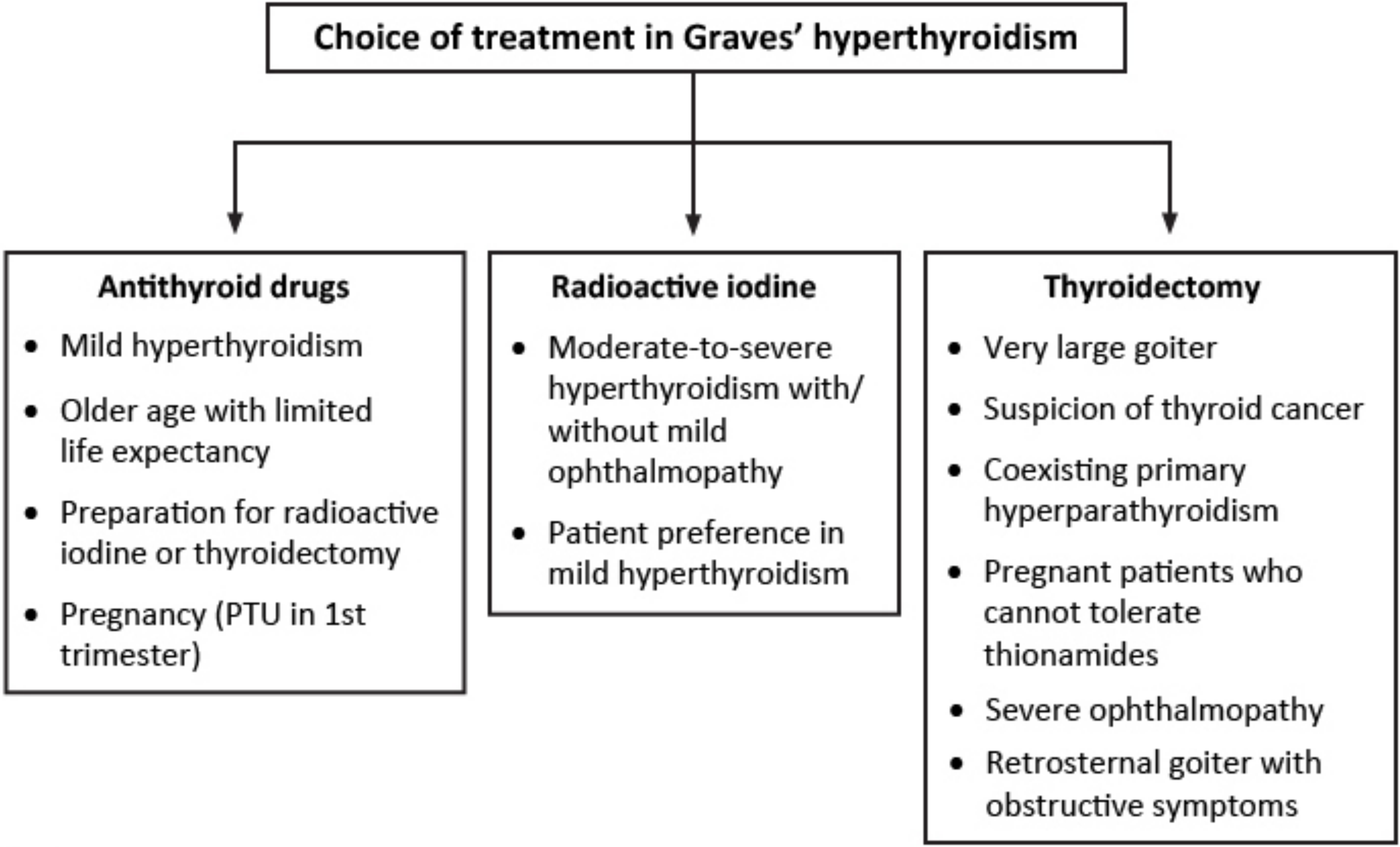
(Choice D) Medial medullary syndrome (alternating hypoglossal hemiplegia) is typically due to branch occlusion of the vertebral or anterior spinal artery. Patients develop contralateral paralysis of the arm and leg and tongue deviation toward the lesion. Contralateral loss of tactile and position sense can also occur with infarcts that extend dorsally.

(Choice E) Medial mid-pontine infarction presents with contralateral ataxia and hemiparesis of the face, trunk, and limbs (ie, ataxic hemiparesis). There is also variable loss of contralateral tactile and position sense.

Educational objective:
Lateral medullary infarct (Wallenberg syndrome) occurs due to occlusion of the posterior inferior cerebellar or vertebral artery. Patients develop loss of pain and temperature over the ipsilateral face and contralateral body, ipsilateral bulbar muscle weakness, vestibulocerebellar impairment (eg, vertigo, nystagmus, ipsilateral limb ataxia), and Horner's syndrome. Motor function of the face and body is typically spared.



Choice of treatment in Graves' hyperthyroidism

Antithyroid drugs

- Mild hyperthyroidism
- Older age with limited life expectancy
- Preparation for radioactive iodine or thyroidectomy
- Pregnancy (PTU in 1st trimester)

Radioactive iodine

- Moderate-to-severe hyperthyroidism with/without mild ophthalmopathy
- Patient preference in mild hyperthyroidism

Thyroidectomy

- Very large goiter
- Suspicion of thyroid cancer
- Coexisting primary hyperparathyroidism
- Pregnant patients who cannot tolerate thionamides
- Severe ophthalmopathy
- Retrosternal goiter with obstructive symptoms

Features of necrotizing fasciitis	
Microbiology	• *Streptococcus pyogenes* (group A streptococci) • *Staphylococcus aureus* • *Clostridium perfringens* • Polymicrobial
Pathogenesis	• Bacteria spread rapidly through subcutaneous tissue & deep fascia, undermining the skin • Most commonly involves extremities & perineal region
Clinical manifestations	• Often antecedent history of minor trauma • Erythema of overlying skin • Swelling & edema • Pain **out of proportion** to examination findings • Systemic symptoms (eg, **fever & hypotension**)
Treatment	• Requires **surgical debridement** & broad-spectrum antibiotics

When the etiology of the necrotizing fasciitis is unknown, broad-spectrum therapy should be started. This includes:

1. **Piperacillin/tazobactam** or a **carbapenem** (eg, impinem, meropenem) will cover Group A *Streptococcus* and anaerobes
2. **Vancomycin** will cover *Staphylococcus aureus*, including methicillin-resistant isolates
3. **Clindamycin** is added to inhibit toxin formation by streptococci/staphylococci

The differential diagnosis for fever in a returning traveler depends on geographic epidemiology and is often divided into 3 categories (with some overlap):

- Early incubation period (<10 days) infections include typhoid fever, dengue fever, chikungunya, influenza, and legionellosis
- Medium incubation period (1-3 weeks) infections include malaria, typhoid fever, leptospirosis, schistosomiasis, and rickettsial disease
- Longer incubation period (>3 weeks) infections include tuberculosis, leishmaniasis, and enteric parasitic infections.

Clinical features of delirium, dementia & depression in the elderly

	Delirium	**Dementia**	**Depression**
Onset	Acute	Gradual (months to years)	Gradual (months)
Consciousness	Impaired	Intact	Intact
Course	Fluctuating	Progressive	Episodic
Prognosis	Reversible	Irreversible	Reversible
Memory impairment	Global impairment	Remote memory spared	Moderately impaired focus/concentration

Medications in recent myocardial infarction

- Antiplatelet medication: Aspirin **plus** P2Y12 inhibitor (eg, clopidogrel, prasugrel, ticagrelor)
- Cardioselective beta blocker: Metoprolol, atenolol, bisoprolol, others
- Lipid-lowering therapy: High-intensity statin
- Angiotensin-converting enzyme inhibitor (**alternate:** angiotensin receptor antagonist)
- Aldosterone antagonist (eplerenone): **Consider adding to angiotensin-converting enzyme inhibitor & beta blocker if left ventricular ejection fraction ≤40%**

Febrile seizure	
Risk factors	• Fever from mild viral (eg, influenza, adenovirus, HHV-6) or bacterial infection • Immunizations (DTaP, MMR) • Family history
Diagnostic criteria	• Age 6 months-6 years • Temperature ≥38 C (100.4 F) • No history of previous afebrile seizures • No CNS infection • No acute systemic metabolic cause of seizure
Subtypes	• Simple: ∘ Nonfocal (tonic-clonic or atonic) ∘ 1 episode <15 minutes or multiple “episodes <30 minutes • Complex: ∘ Focal ∘ 1 episode >15 minutes or multiple “episodes >30 minutes

Management	- Abortive therapy if seizure ≥5 minutes - Reassurance/education
Prognosis	- Normal development/intelligence - ~30% risk of recurrence - <5% risk of epilepsy

DTaP = Diphtheria, tetanus, and pertussis; **CNS** = central nervous system; **HHV-6** = human herpesvirus 6; **MMR** = measles, mumps, rubella.

Subtypes	• Simple: ◦ Nonfocal (tonic-clonic or atonic) ◦ 1 episode <15 minutes or multiple “episodes <30 minutes • Complex: ◦ Focal ◦ 1 episode >15 minutes or multiple “episodes >30 minutes
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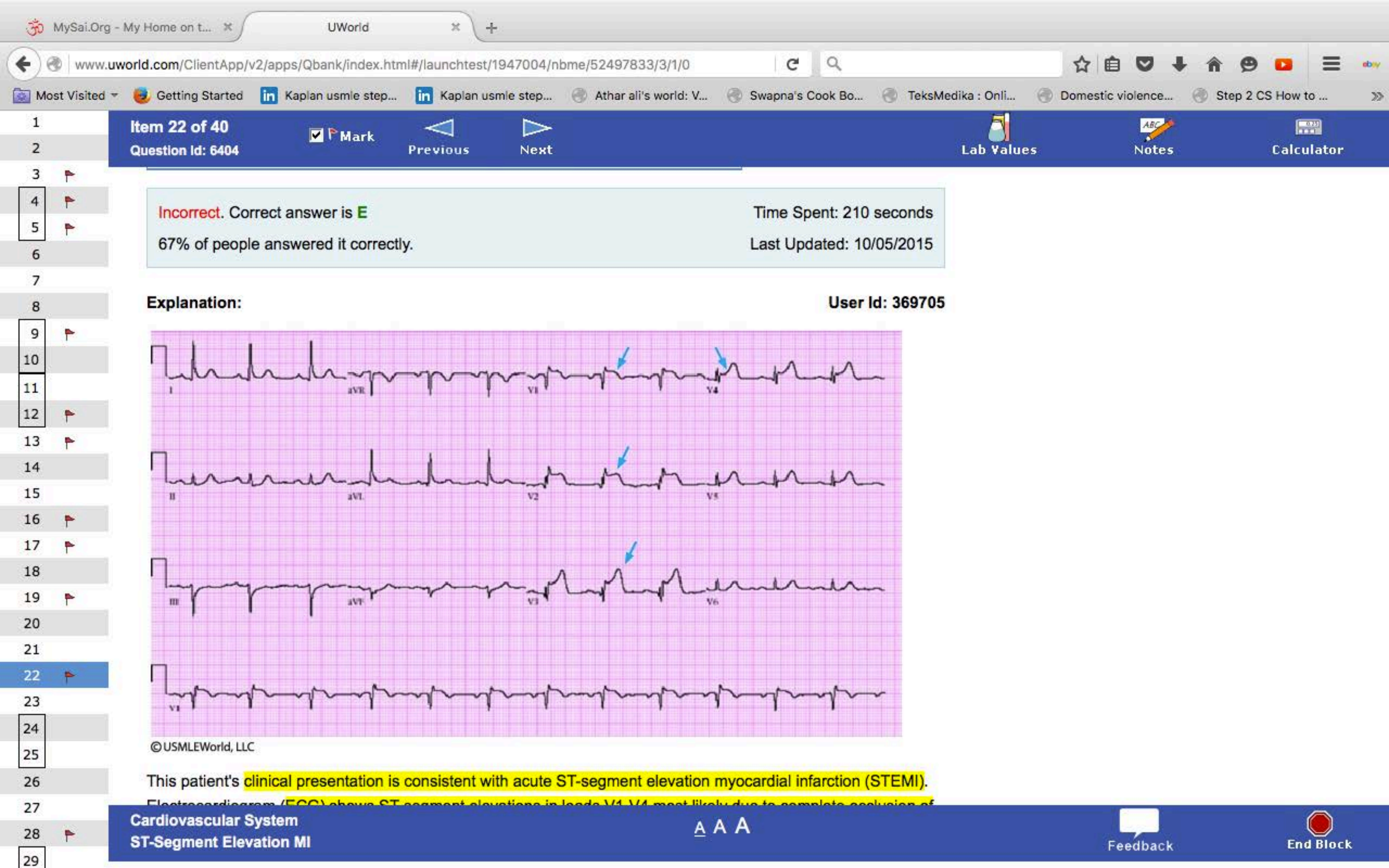
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Most Visited
Getting Started
Kaplan usmle step...
Kaplan usmle step...
Athar ali's world: V...
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Domestic violence...
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Notes
Calculator
I
aVR
V1
V4
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aVL
V2
V5
III
aVF
V3
V6
V1
A A A
Feedback
End Block

Item 22 of 40

Question Id: 6404

Incorrect. Correct answer is E

67% of people answered it correctly.

Time Spent: 210 seconds

Last Updated: 10/05/2015

Explanation:

User Id: 369705

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This patient's clinical presentation is consistent with acute ST-segment elevation myocardial infarction (STEMI). Electrocardiogram (ECG) shows ST-segment elevations in leads V1-V4 most likely due to complete occlusion of

Cardiovascular System

ST-Segment Elevation MI

Current guidelines recommend the use of primary percutaneous coronary intervention (PCI) for any patient with acute STEMI as follows:

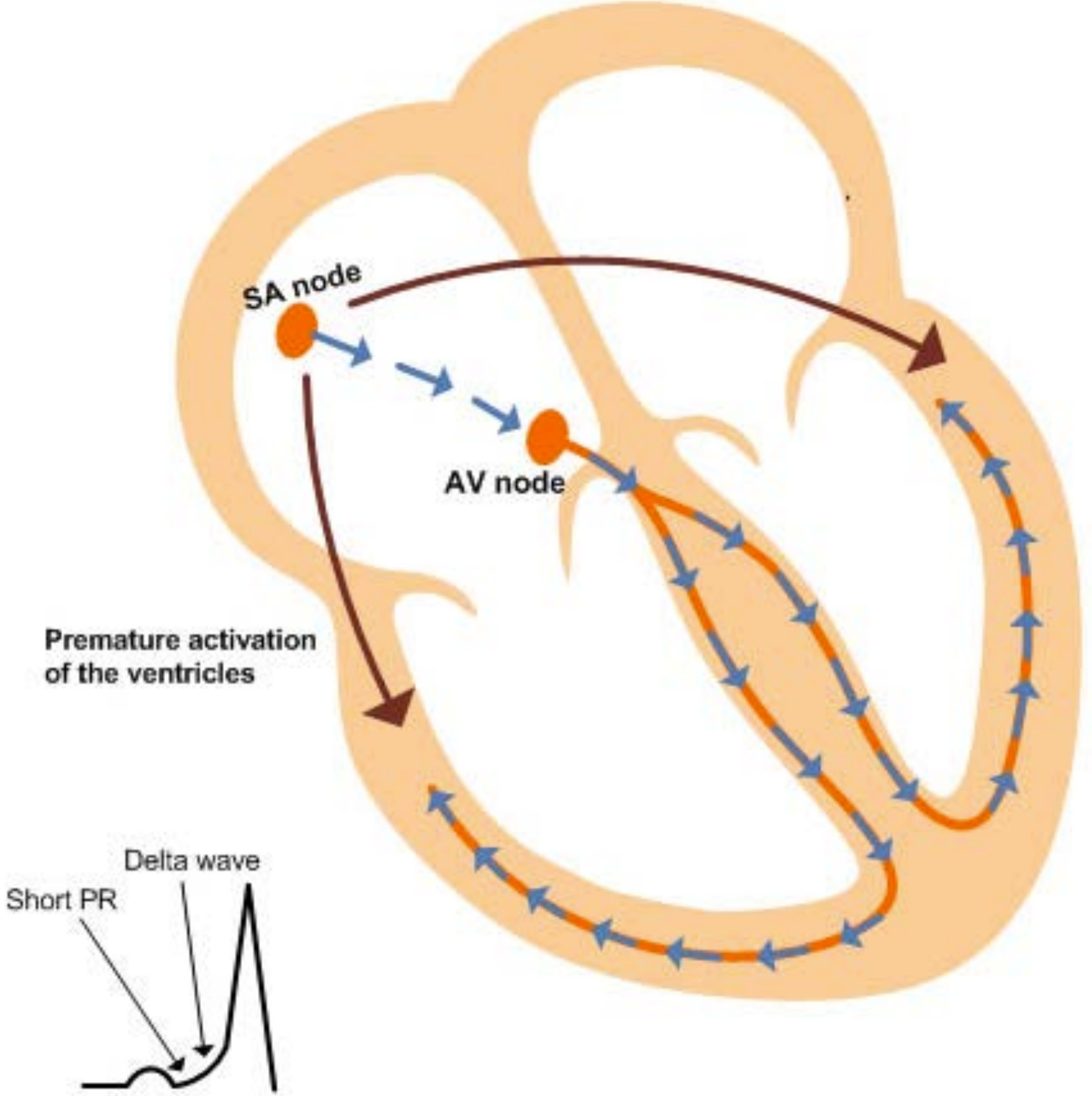
- Within **12 hours of symptom onset**

  AND

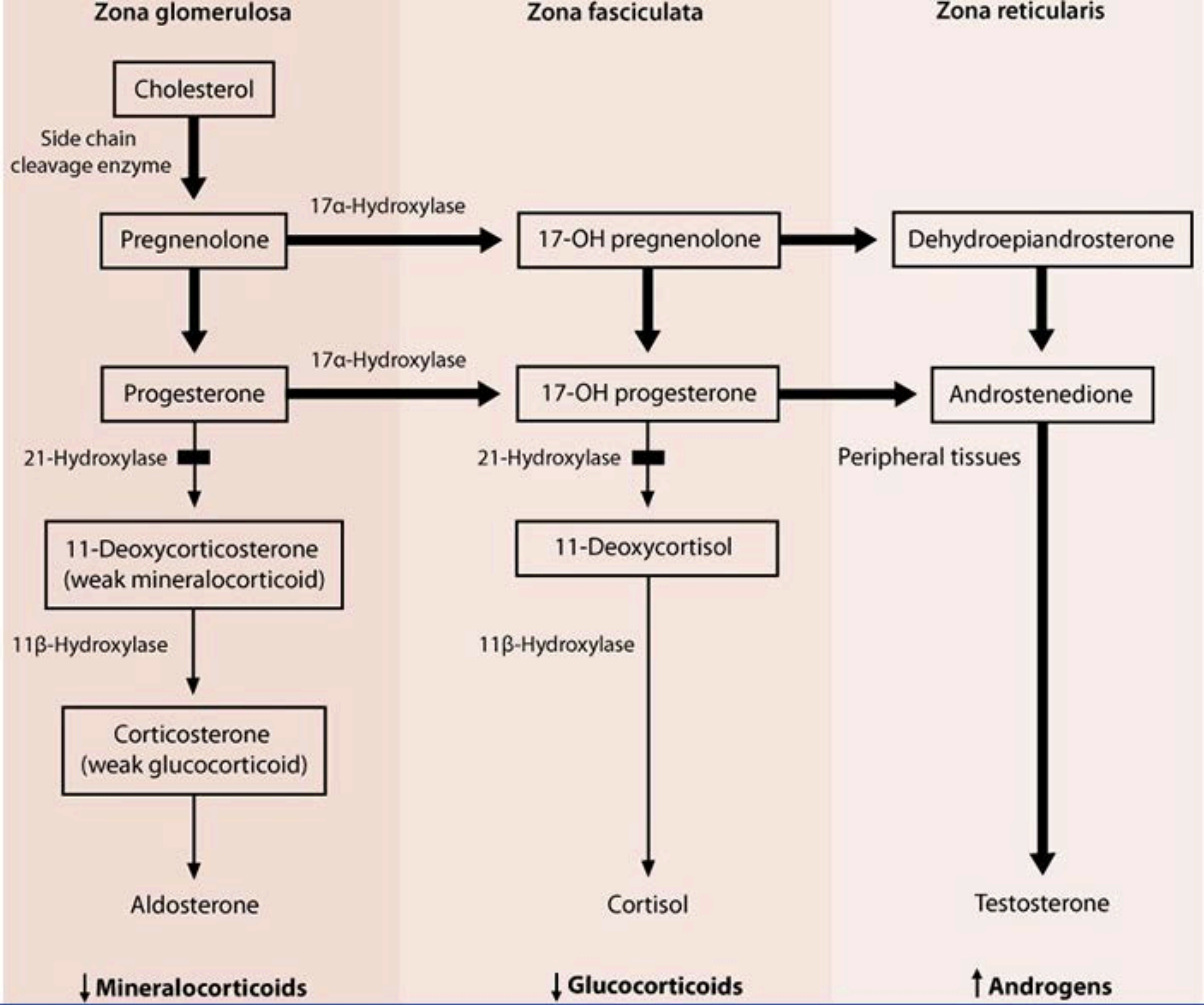
- Within **90 minutes** of first medical contact to device time at a PCI-capable facility (door to balloon time)

  OR

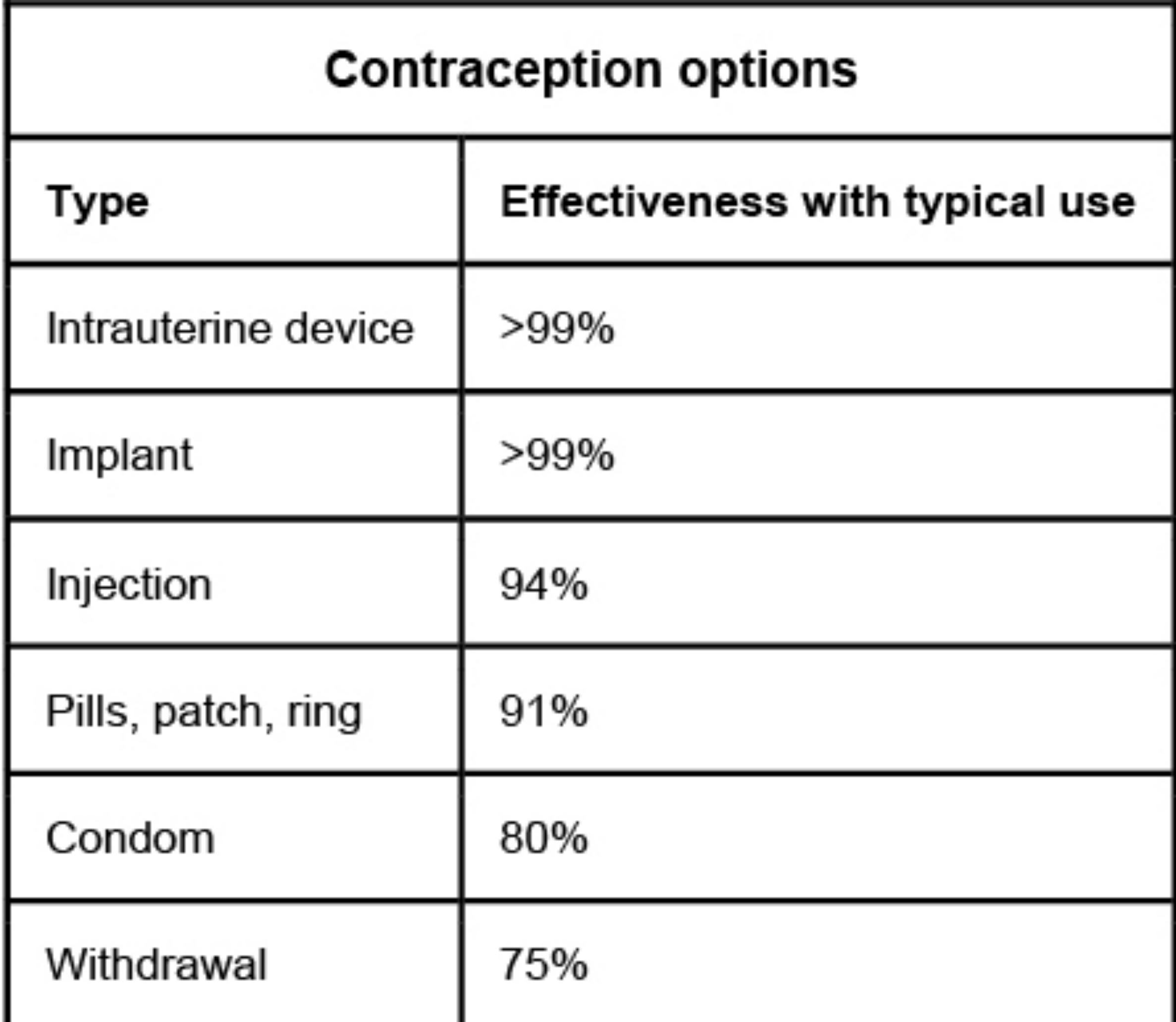
- Within 120 minutes of first medical contact to device time at a non-PCI-capable facility (to allow time for transport to a PCI-capable facility)


SA node
AV node
Premature activation of the ventricles
Delta wave
Short PR

Enzyme deficiency	Hormonal abnormalities	Symptoms
21-hydroxylase	• ↓ Cortisol & aldosterone • ↑ Testosterone • ↑ 17-hydroxyprogesterone	• Ambiguous genitalia in girls • Salt wasting (vomiting, hypotension, ↓Na^+, ↑K^+)
11β-hydroxylase	• ↓ Cortisol & aldosterone • ↑ Testosterone • ↑ 11-deoxycorticosteone (weak mineralocorticoid) & 11- deoxycortisol	• Ambiguous genitalia in girls • Fluid & salt retention, hypertension
17α-hydroxylase	• ↓ Cortisol & testosterone • ↑ Mineralocorticoids • ↑ Corticosterone (weak glucocorticoid)	• All patients phenotypically female • Fluid & salt retention, hypertension


Zona glomerulosa
Zona fasciculata
Zona reticularis
Cholesterol
Side chain cleavage enzyme
Pregnenolone
17α-Hydroxylase
17-OH pregnenolone
Dehydroepiandrosterone
Progesterone
17α-Hydroxylase
17-OH progesterone
Androstenedione
21-Hydroxylase
21-Hydroxylase
Peripheral tissues
11-Deoxycorticosterone (weak mineralocorticoid)
11-Deoxycortisol
11β-Hydroxylase
11β-Hydroxylase
Corticosterone (weak glucocorticoid)
Aldosterone
Cortisol
Testosterone
↓ Mineralocorticoids
↓ Glucocorticoids
↑ Androgens

Classic congenital adrenal hyperplasia	
Pathogenesis	• Autosomal recessive • 21-hydroxylase deficiency
Clinical presentation	• "Salt-wasting syndrome" in neonatal boys & girls ○ Hypotension ○ Dehydration ○ Vomiting • Ambiguous genitalia in girls
Laboratory findings	• ↓ Sodium, ↑ potassium, ↓ glucose • ↑ 17-α hydroxyprogesterone
Treatment	• Glucocorticoids & mineralocorticoids • High-salt diet • Genital reconstructive surgery for girls • Psychosocial support



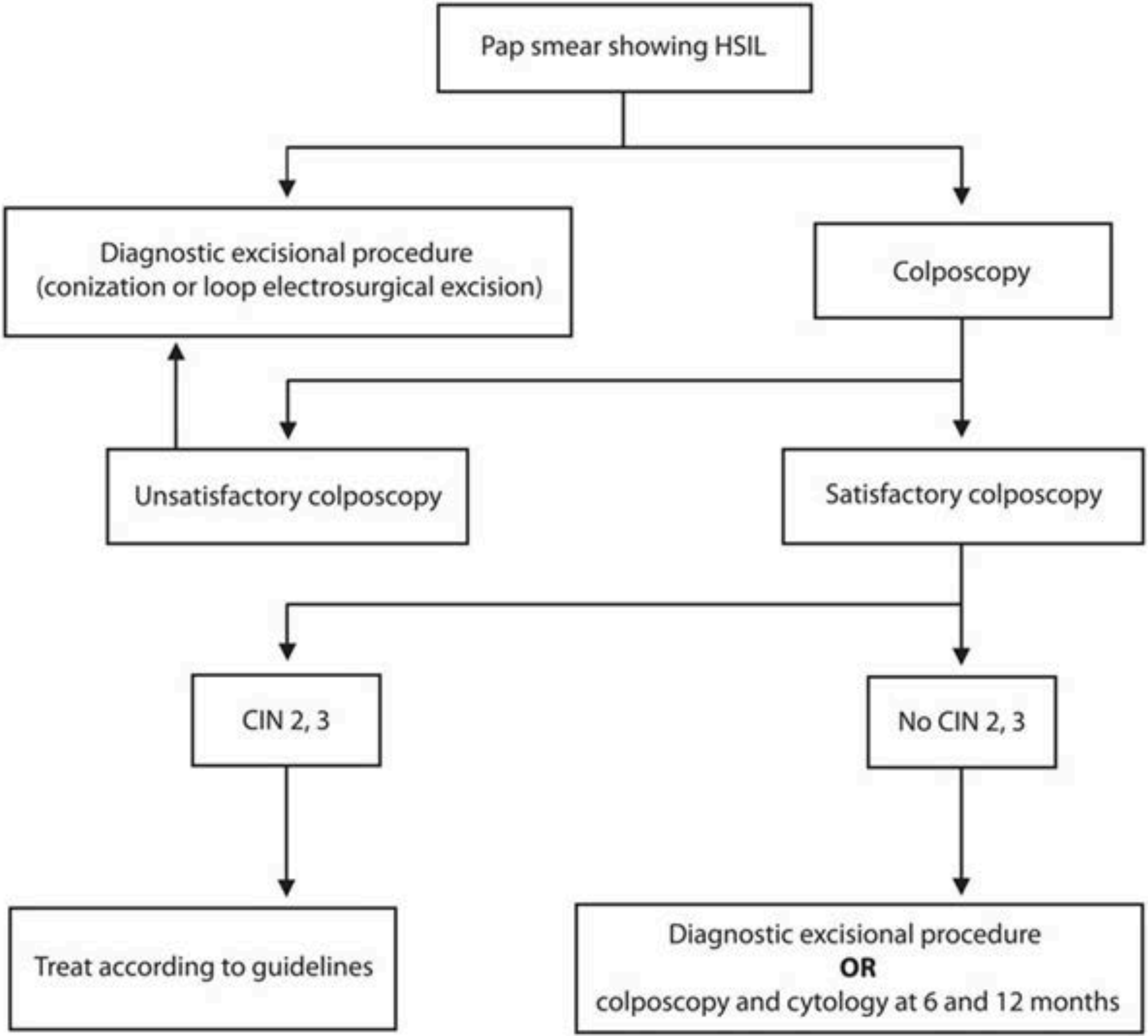
Contraception options

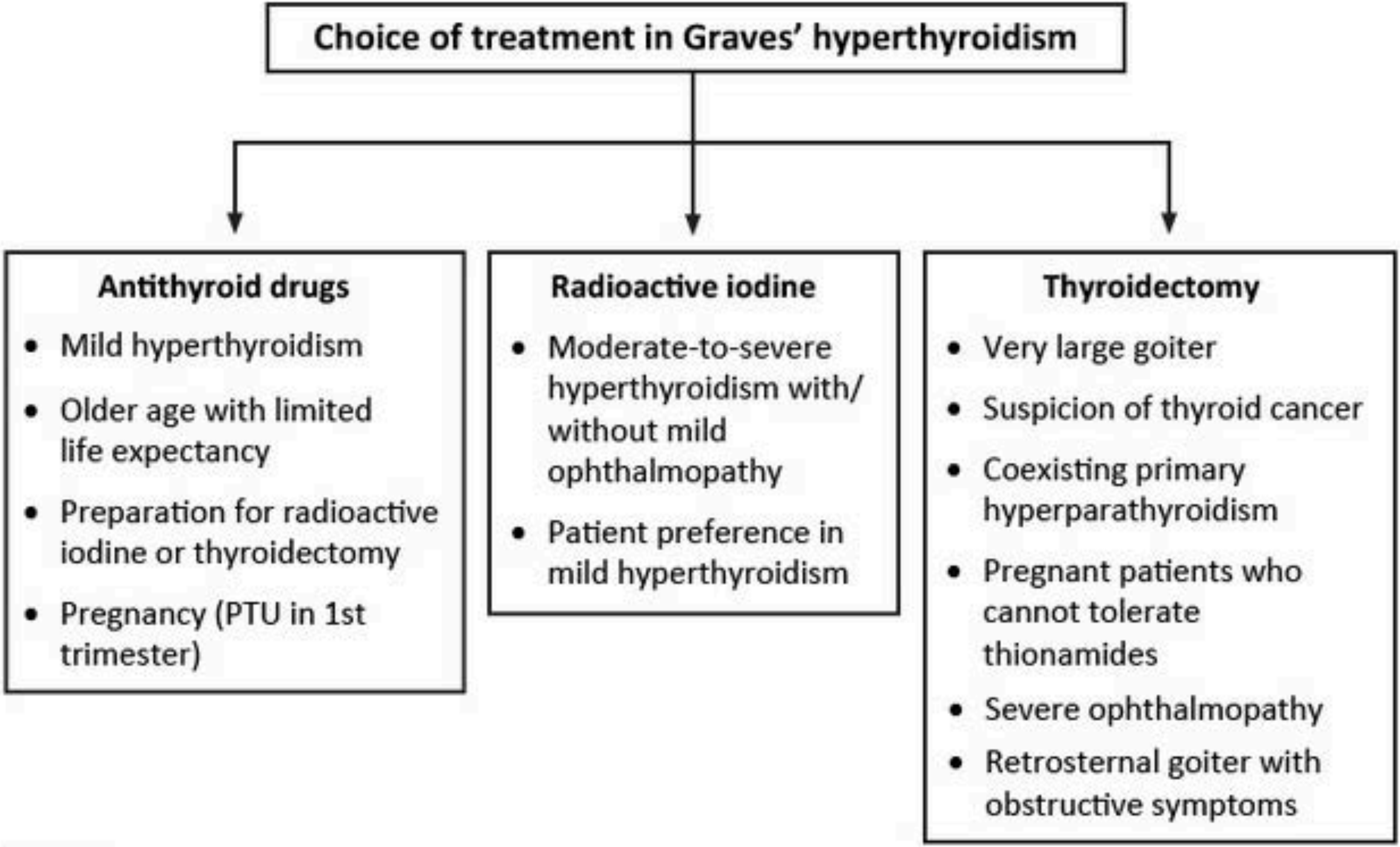
Type	Effectiveness with typical use
Intrauterine device	>99%
Implant	>99%
Injection	94%
Pills, patch, ring	91%
Condom	80%
Withdrawal	75%

An unintended pregnancy poses increased risk to these women. The ideal method of contraception for this patient has the following attributes:

1. High efficacy
2. Does not require daily administration
3. Does not increase her risk of venous thromboembolic disease
4. Does not worsen her anemia secondary to heavier menses
5. Is not a method that has failed her previously

Management of women with High-grade Squamous Intraepithelial Lesion (HSIL)


Pap smear showing HSIL
Diagnostic excisional procedure (conization or loop electrosurgical excision)
Colposcopy
Unsatisfactory colposcopy
Satisfactory colposcopy
CIN 2, 3
No CIN 2, 3
Treat according to guidelines
Diagnostic excisional procedure **OR** colposcopy and cytology at 6 and 12 months



Choice of treatment in Graves' hyperthyroidism

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Thyroidectomy

- Very large goiter
- Suspicion of thyroid cancer
- Coexisting primary hyperparathyroidism
- Pregnant patients who cannot tolerate thionamides
- Severe ophthalmopathy
- Retrosternal goiter with obstructive symptoms

Cardiovascular effects of hyperthyroidism
↑ Heart rate
↑ Cardiac output
↑ Ejection fraction
↑ Myocardial oxygen consumption
↑ Pulmonary artery pressure
↑ Pulse pressure
↓ Diastolic blood pressure
↓ Systemic vascular resistance

Clinical features of ovarian & adnexal torsion

Risk factors	• Ovarian mass, especially ≥5 cm • Women of reproductive age • Pregnancy • Infertility treatment with ovulation induction
Clinical presentation	• **Sudden onset** of moderate-to-severe pelvic pain (right side more common) • Unilateral & tender adnexal mass • Nausea & vomiting • Possible low-grade fever • Abnormal vaginal bleeding less common
Diagnosis & treatment	• B-hCG to exclude ectopic pregnancy • Pelvic color Doppler ultrasound preferred for diagnosis • Prompt laparoscopy with detorsion • Salpingo-oophorectomy for obvious adnexal necrosis or suspected ovarian malignancy

The three important clinical criteria for the diagnosis of ankylosing spondylitis are:

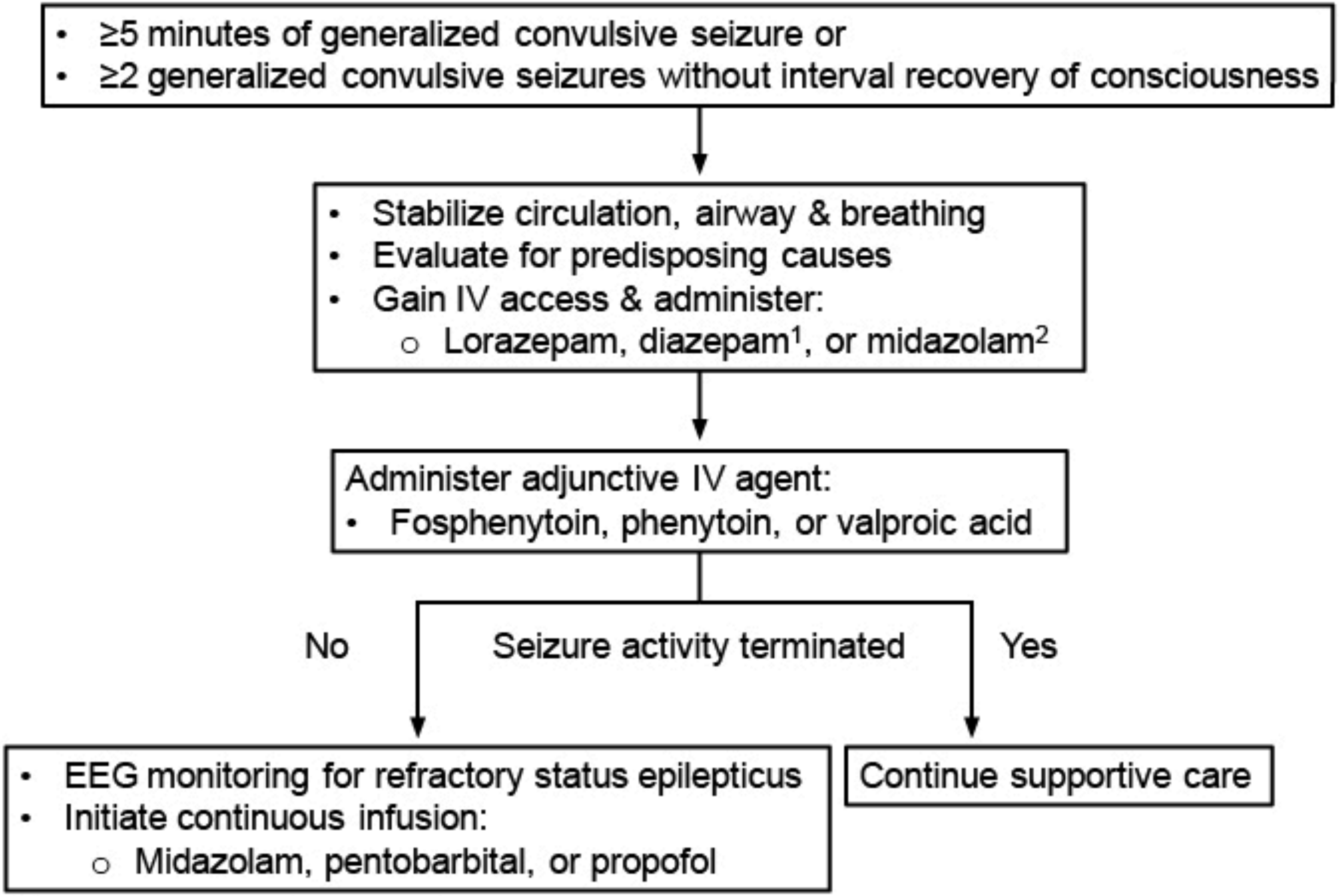
1. Presence of low back pain and stiffness for more than a three month duration that improves with exercise or activity.
2. Limitation of the range of motion of the lumbar spine.
3. Limitation of chest expansion relative to the normal values.

The following radiographs are used in monitoring the disease progression of patients with ankylosing spondylitis:

1. Anteroposterior and lateral views of the lumbar spine
2. Lateral view of the cervical spine
3. Pelvic radiograph, including the sacroiliac joints and hip

<table>
<tr><th colspan="2">Electroconvulsive therapy</th></tr>
<tr><td>Indications</td><td>Conditions treated
• Unipolar & bipolar depression
• Catatonia
• Bipolar mania
Specific indications
• Treatment resistance
• Psychotic features present
• Emergency conditions
○ Pregnancy
○ Refusal to eat or drink
○ Imminent risk for suicide
• Pharmacotherapy contraindicated due to comorbid medical illness or poor tolerability
• History of ECT response</td></tr>
<tr><td>Safety</td><td>• No absolute contraindications
• Increased risk
○ Severe cardiovascular disease, recent myocardial infarction
○ Space-occupying brain lesion
○ Recent stroke, unstable aneurysm</td></tr>
</table>

Management of generalized convulsive status epilepticus



- ≥5 minutes of generalized convulsive seizure or
- ≥2 generalized convulsive seizures without interval recovery of consciousness

- Stabilize circulation, airway & breathing
- Evaluate for predisposing causes
- Gain IV access & administer:
  - Lorazepam, diazepam[1], or midazolam[2]

Administer adjunctive IV agent:
- Fosphenytoin, phenytoin, or valproic acid

No

Seizure activity terminated

Yes

- EEG monitoring for refractory status epilepticus
- Initiate continuous infusion:
  - Midazolam, pentobarbital, or propofol

Continue supportive care

[1] May also be administered per rectum.

[2] May also be administered intramuscularly.

IV = intravenous; **EEG** = electroencephalogram.

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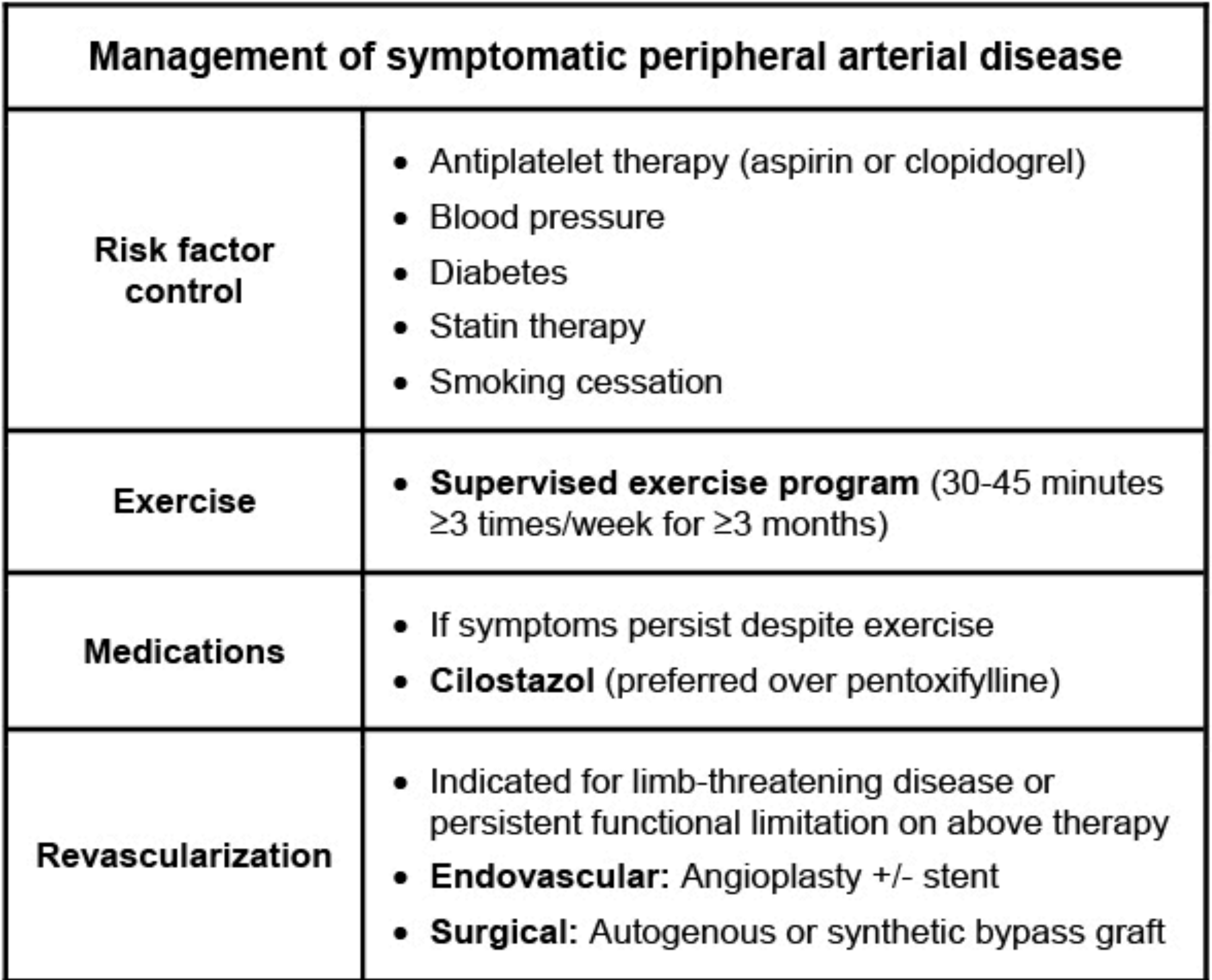
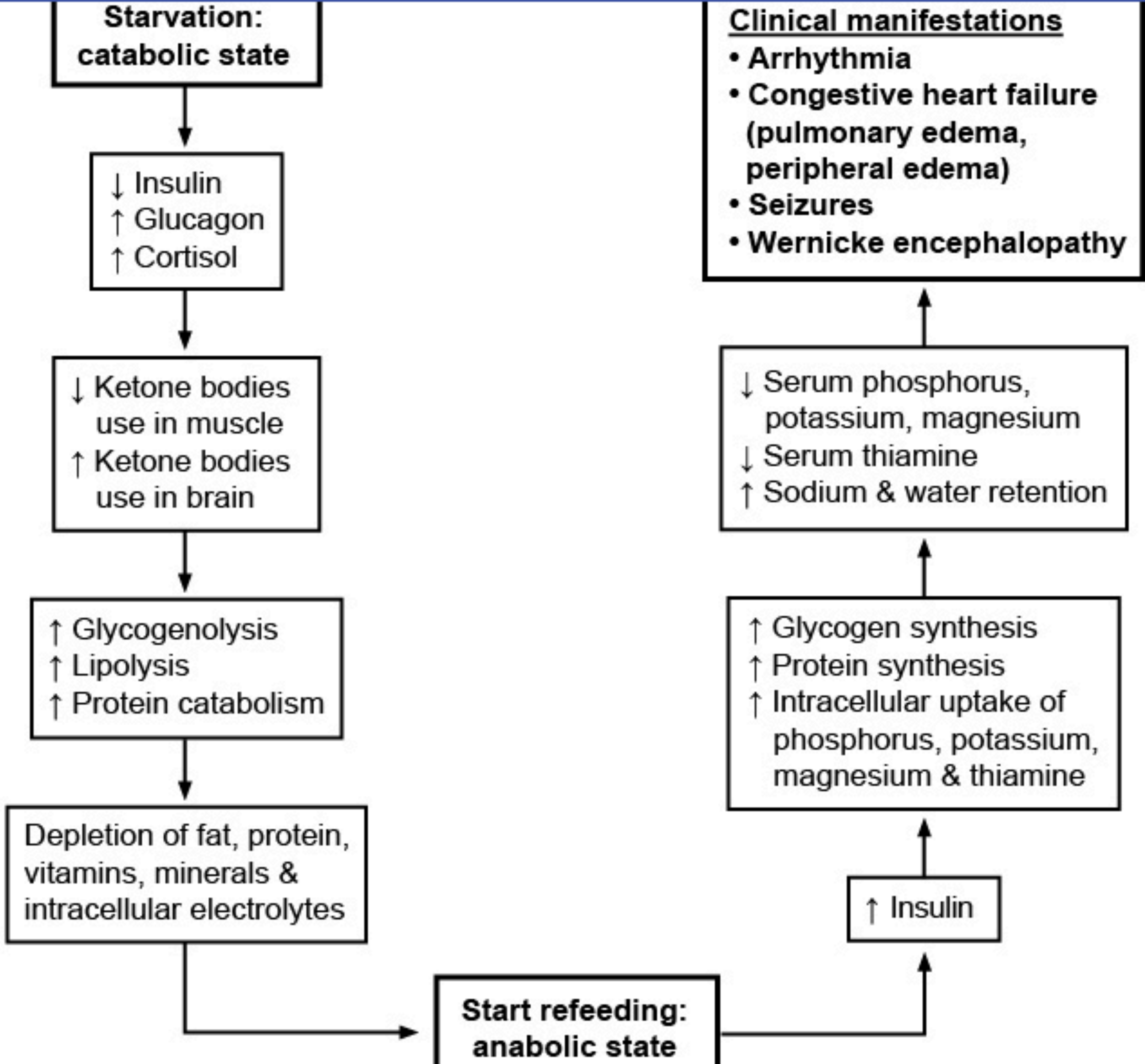


Management of symptomatic peripheral arterial disease	
Risk factor control	• Antiplatelet therapy (aspirin or clopidogrel) • Blood pressure • Diabetes • Statin therapy • Smoking cessation
Exercise	• **Supervised exercise program** (30-45 minutes ≥3 times/week for ≥3 months)
Medications	• If symptoms persist despite exercise • **Cilostazol** (preferred over pentoxifylline)
Revascularization	• Indicated for limb-threatening disease or persistent functional limitation on above therapy • **Endovascular:** Angioplasty +/- stent • **Surgical:** Autogenous or synthetic bypass graft

Favorable prognostic factors in schizophrenia

- Female gender
- Older age at onset (≥ 40)
- Acute onset of symptoms (no prodrome)
- Identifiable precipitant
- Predominantly positive (rather than negative) symptoms
- Presence of mood symptoms
- Good pre-morbid functioning
- No family history of schizophrenia
- Good family support
- Shorter duration of active symptoms

Anorexia nervosa	
Clinical features	• BMI <18.5 • Intense fear of weight gain • Distorted views of body weight & shape
Treatment	• Cognitive-behavioral therapy • Nutritional rehabilitation • Olanzapine for severe cases
Complications	• Hypothermia • Malnutrition • Dehydration • Orthostatic hypotension • Arrhythmia • Refeeding syndrome



Starvation: catabolic state

↓ Insulin
↑ Glucagon
↑ Cortisol

↓ Ketone bodies use in muscle
↑ Ketone bodies use in brain

↑ Glycogenolysis
↑ Lipolysis
↑ Protein catabolism

Depletion of fat, protein, vitamins, minerals & intracellular electrolytes

Start refeeding: anabolic state

↑ Insulin

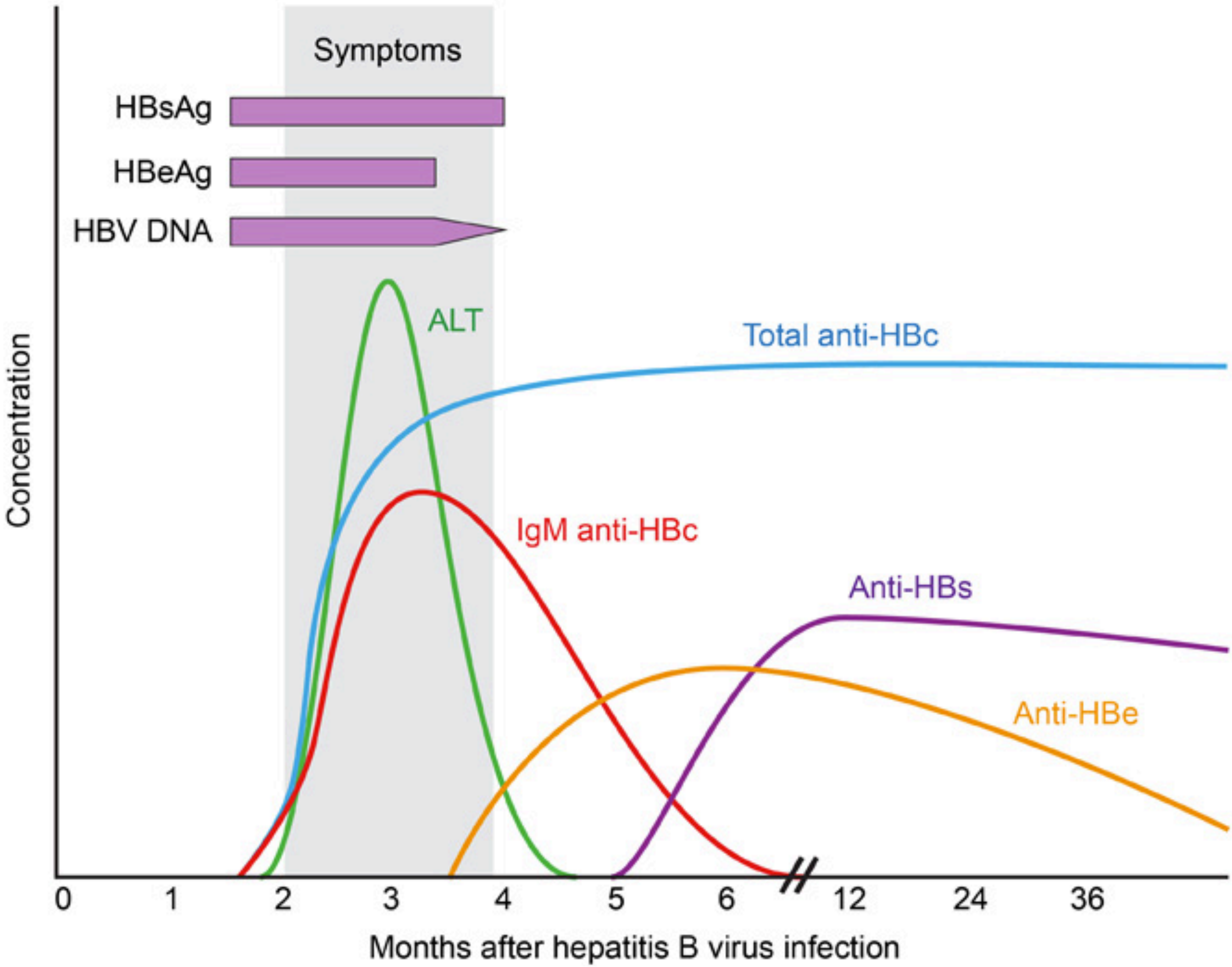
↑ Glycogen synthesis
↑ Protein synthesis
↑ Intracellular uptake of phosphorus, potassium, magnesium & thiamine

↓ Serum phosphorus, potassium, magnesium
↓ Serum thiamine
↑ Sodium & water retention

Clinical manifestations

- **Arrhythmia**
- **Congestive heart failure (pulmonary edema, peripheral edema)**
- **Seizures**
- **Wernicke encephalopathy**

Acute hepatitis B infection

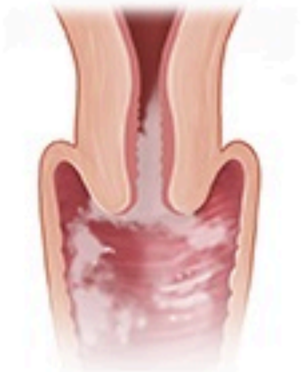
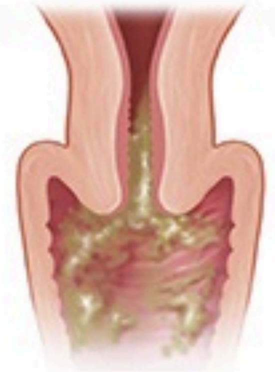
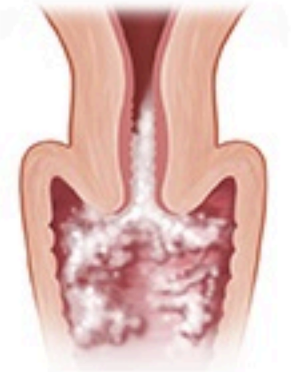
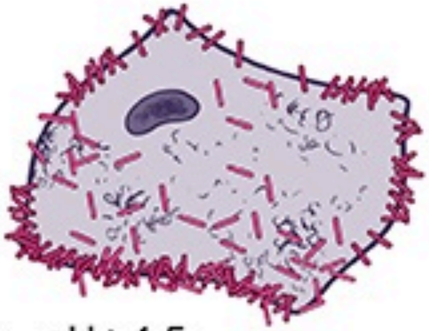
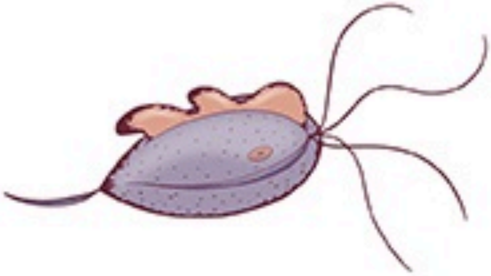
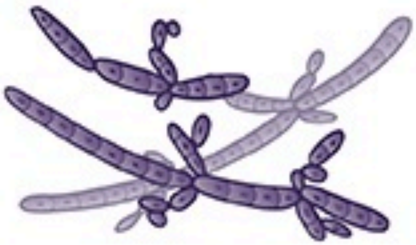


Management of DKA & HHS

IV fluids	• High-flow 0.9% normal saline is initially recommended • Add dextrose 5% when serum glucose is ≤200 mg/dL
Insulin	• Initial continuous **IV** insulin infusion • Switch to **SQ** (basal bolus) insulin for the following: Able to eat, glucose <200 mg/dL, anion gap <12 mEq/L, serum HCO_3 ≥15 mEq/L • Overlap SQ & IV insulin by 1-2 hours
Potassium	• Add IV potassium if serum K^+ ≤5.2 mEq/L • Hold insulin for serum K^+ <3.3 mEq/L • Nearly all patients K^+ depleted, even with hyperkalemia
Bicarbonate	• Consider for patients with pH <6.9
Phosphate	• Consider for serum phosphate <1.0 mg/dL, cardiac dysfunction, or respiratory depression • Monitor serum calcium frequently

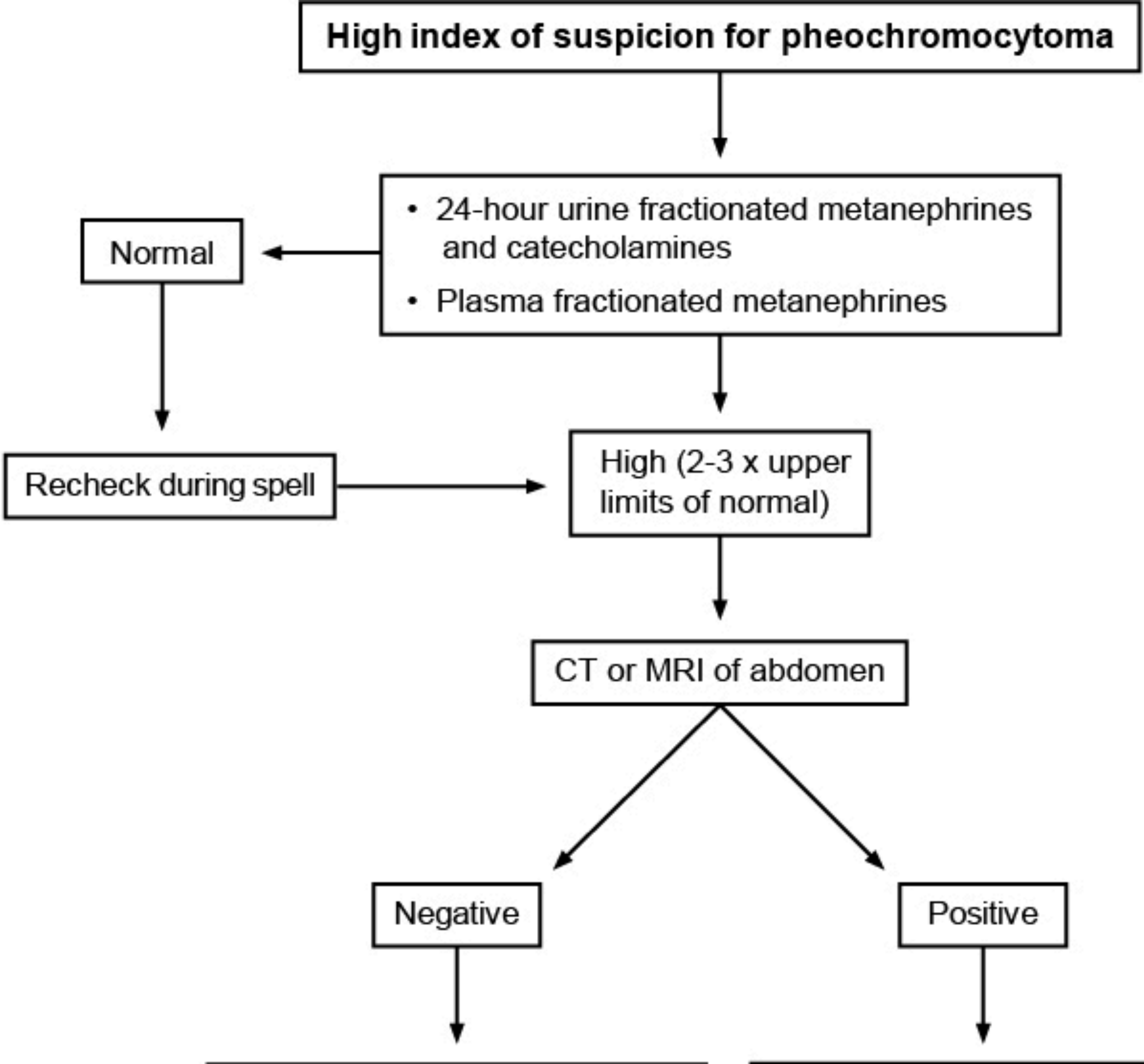
DKA = diabetic ketoacidosis; **HHS** = hyperglycemic hyperosmolar nonketotic state; **IV** = intravenous; **SQ** = subcutaneous.

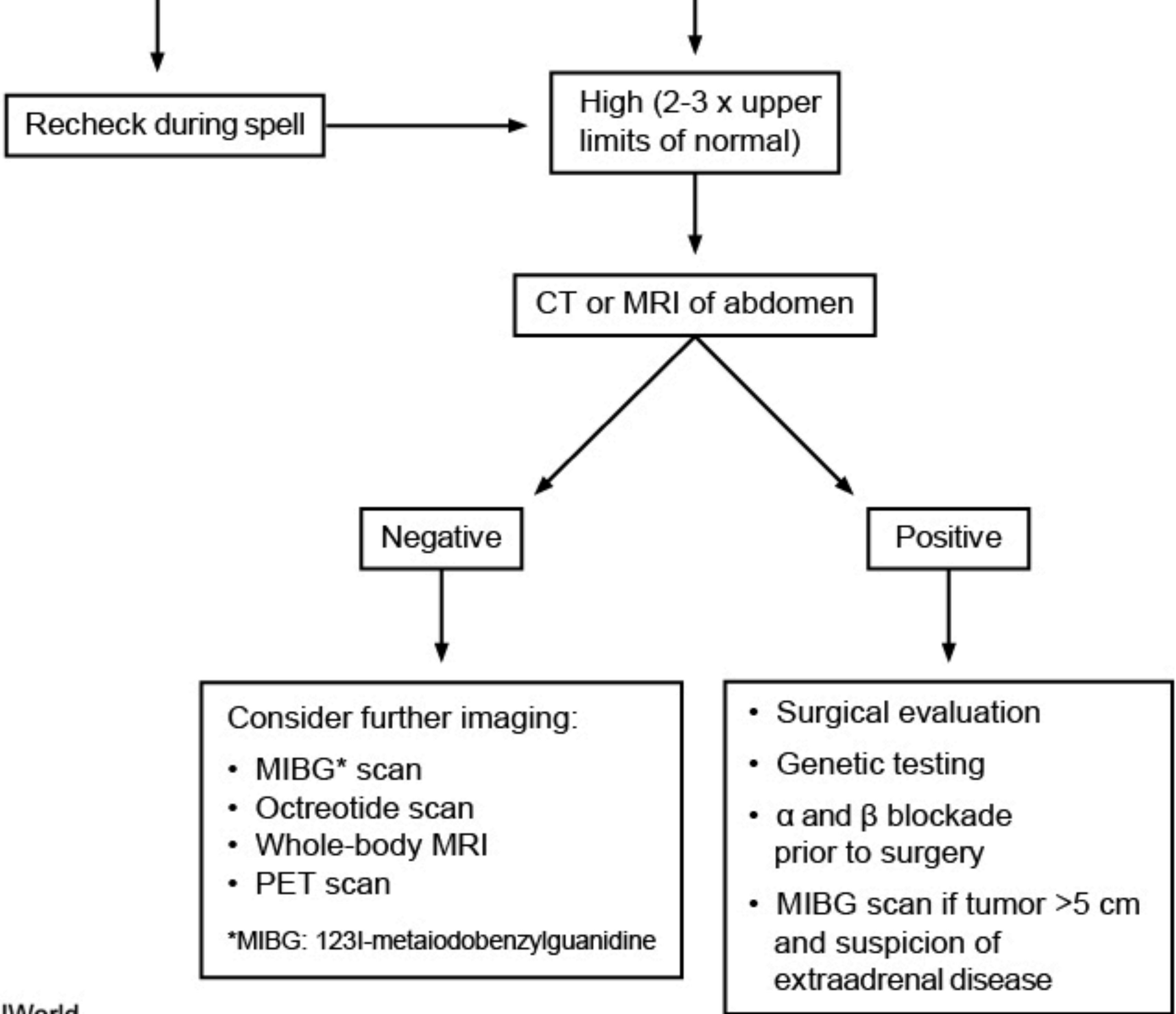
Differential diagnosis of vaginitis

Diagnosis	**Bacterial vaginosis** (*Gardnerella vaginalis*)	**Trichomoniasis** (*Trichomonas vaginalis*)	**Candida vaginitis** (*Candida albicans*)
Examination	 - Thin, off-white discharge with fishy odor - No inflammation	 - Thin, yellow-green, malodorous, frothy discharge - Vaginal inflammation	 - Thick, "cottage cheese" discharge - Vaginal inflammation
Laboratory findings	 - pH >4.5 - Clue cells - Positive whiff test (amine odor with KOH)	 - pH >4.5 - Motile trichomonads	 - Normal pH (3.8 - 4.5) - Pseudohyphae
Treatment	Metronidazole or clindamycin	Metronidazole; treat sexual partner	Fluconazole

Indications for testing for pheochromocytoma

- Family history of pheochromocytoma
- Episodic headaches, diaphoresis, or tachycardia
- Early-age onset of hypertension
- Refractory hypertension
- Familial syndromes (eg, MEN2, neurofibromatosis-1, von Hippel-Lindau)
- Adrenal mass discovered incidentally on imaging
- Idiopathic dilated cardiomyopathy
- Paroxysmal hypertension and/or tachycardia during common procedures


High index of suspicion for pheochromocytoma
24-hour urine fractionated metanephrines and catecholamines
Plasma fractionated metanephrines
Normal
Recheck during spell
High (2-3 x upper limits of normal)
CT or MRI of abdomen
Negative
Positive


Recheck during spell
High (2-3 x upper limits of normal)
CT or MRI of abdomen
Negative
Positive
Consider further imaging:
• MIBG* scan
• Octreotide scan
• Whole-body MRI
• PET scan
*MIBG: 123I-metaiodobenzylguanidine
• Surgical evaluation
• Genetic testing
• α and β blockade prior to surgery
• MIBG scan if tumor >5 cm and suspicion of extraadrenal disease

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Surgical complications of adrenalectomy for pheochromocytoma

Complication	Mechanism	Treatment
Hypertensive crisis	• ↑ Catecholamine release due to endotracheal intubation & adrenal gland manipulation • ↑ Serum norepinephrine with larger tumors (>4 cm diameter)	Intravenous nitroprusside, phentolamine, or nicardipine
Hypotension	• ↓ Catecholamines after tumor removal • Persistent alpha blockade from preoperative long-acting alpha blocker (eg, phenoxybenzamine)	Normal saline bolus, pressors if unresponsive
Hypoglycemia	↑ Insulin secretion following tumor removal (catecholamines suppress insulin secretion)	Intravenous dextrose infusion
Cardiac tachyarrhythmias	↑ Catecholamine release from adrenal gland handling	Intravenous lidocaine or esmolol

Number needed to treat & number needed to harm

	Disease present	Disease absent
Exposed	A	B
Non-exposed	C	D

$\frac{A}{A+B}$ = risk of disease among exposed; $\frac{C}{C+D}$ = risk among non-exposed

If exposure leads to ↓ risk of disease:

$$ARR = \frac{C}{C+D} - \frac{A}{A+B} \ \& \ NNT = \frac{1}{ARR}$$

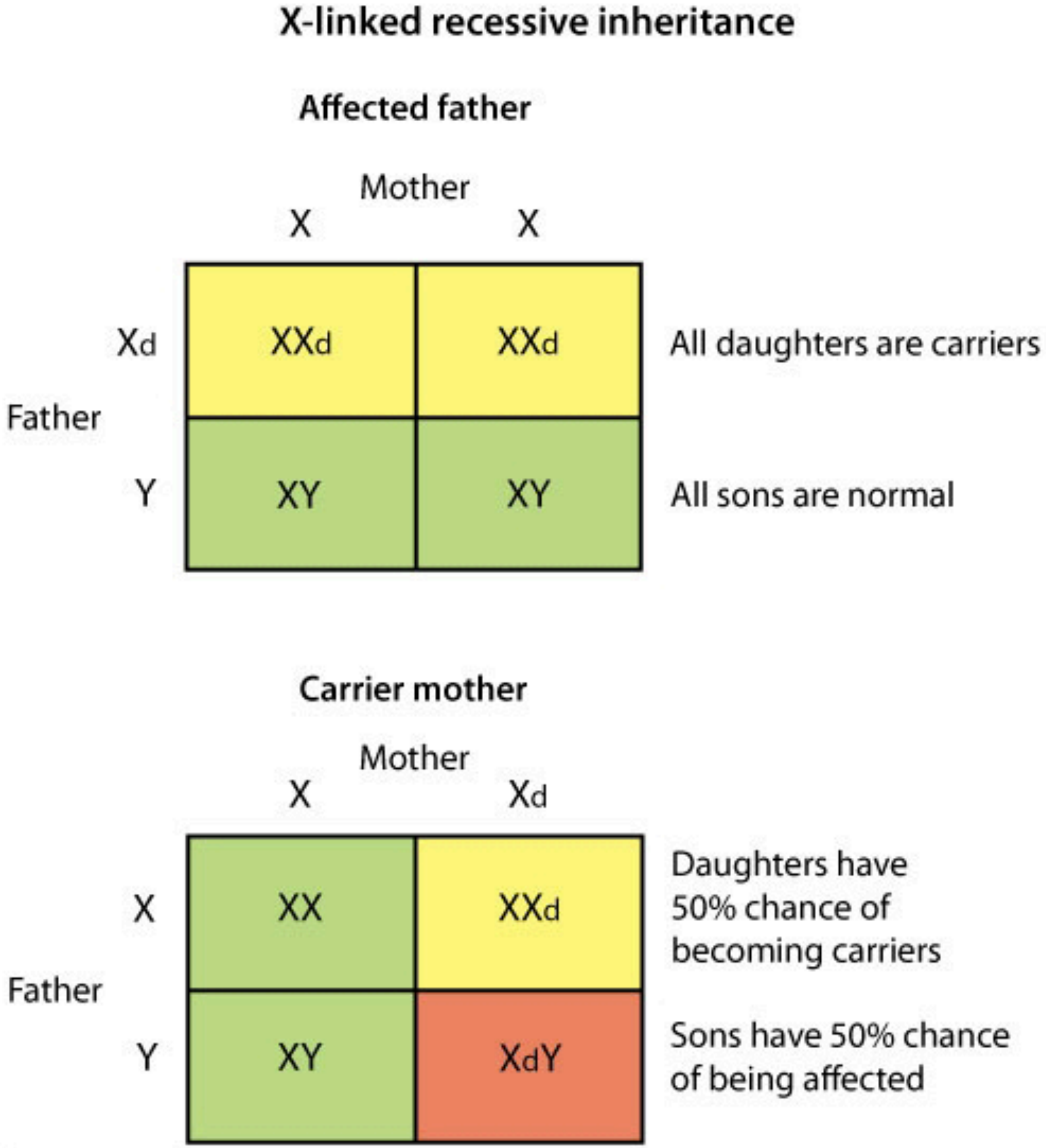
If exposure leads to ↑ risk of disease:

$$ARI = \frac{A}{A+B} - \frac{C}{C+D} \ \& \ NNH = \frac{1}{ARI}$$

ARI = absolute risk increase (also called attributable risk); **ARR** = absolute risk reduction; **NNH** = number needed to harm; **NNT** = number needed to treat.

This patient most likely has **radiation-induced cardiotoxicity**. Long-term survivors of Hodgkin lymphoma are at risk of developing cardiovascular complications due to chemotherapy and/or radiation therapy. Radiation therapy causes diffuse fibrosis in the interstitium of the myocardium, along with progressive fibrosis of the pericardial layers, cells in the conduction system, and the cusps and/or leaflets of the valves. It also causes injury to the intimal layer, with arterial narrowing typically involving the ostial parts of coronary vessels. These effects lead to:

1. Myocardial ischemia and/or infarction
2. Restrictive cardiomyopathy with **diastolic dysfunction**
3. Constrictive pericarditis
4. Valvular abnormalities (mitral or aortic stenosis/regurgitation)
5. Conduction defects (sick sinus syndrome or variable degrees of heart block)



X-linked recessive inheritance

Affected father

		Mother		
		X	X	
Father	X_d	XX_d	XX_d	All daughters are carriers
	Y	XY	XY	All sons are normal

Carrier mother

		Mother		
		X	X_d	
Father	X	XX	XX_d	Daughters have 50% chance of becoming carriers
	Y	XY	X_dY	Sons have 50% chance of being affected

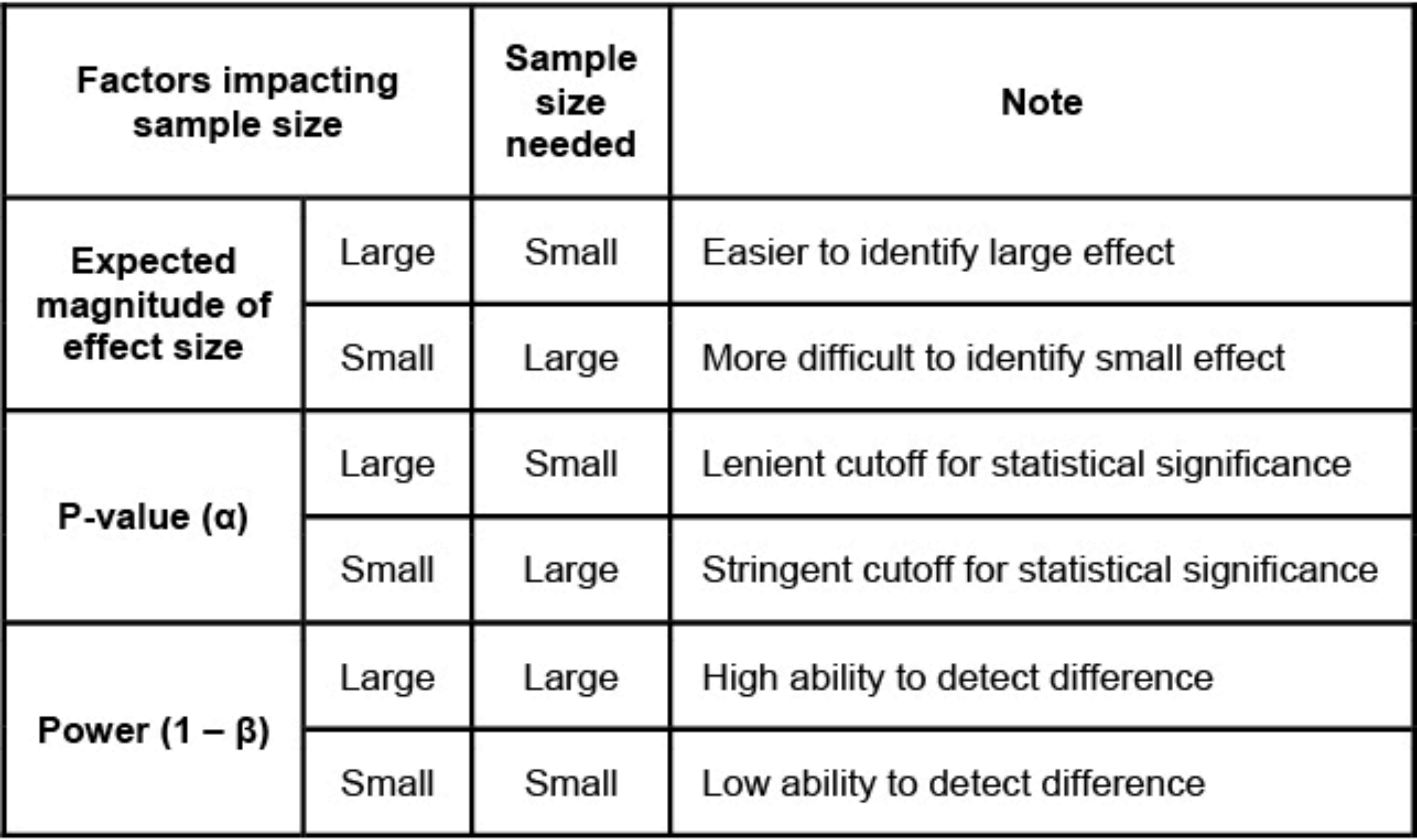
Non-REM sleep arousal disorders	
Diagnosis	• Recurrent incomplete awakenings from **non-REM** sleep with 1 of the following: **Sleepwalking:** Blank, staring face, relatively unresponsive to attempts to awaken **Sleep terrors:** Abrupt arousals from sleep (panicked scream, terror, autonomic arousal, unresponsive to comfort) • Little or no dream recall • Amnesia for episodes
Differential diagnosis	• **Nightmare disorder** (occurs during **REM**, detailed dream recall) • REM sleep-related behavior disorder (occurs during REM, “acts out dreams”) • Sleep-related seizures • Nocturnal panic attacks
Prognosis and treatment	• Mostly self-limiting • Administer low-dose benzodiazepine at bedtime if episodes are frequent, persistent, and distressing

Neonatal chlamydial infections

	Conjunctivitis	Pneumonia
Mode of transmission	Direct vaginal contact during delivery	
Age at onset	5-14 days	4-12 weeks
Clinical manifestations	• Thickened injected conjunctivae (**chemosis**) • Watery, mucopurulent, or blood-stained discharge • Eyelid swelling • Conjunctival pseudomembrane	• **Staccato** cough • Nasal congestion • Rales • **Hyperinflation** on chest x-ray
Treatment	Oral **erythromycin** for 14 days	

Sensitivity	The probability of a diseased person testing positive	$\text{Sensitivity} = \dfrac{\text{True positives}}{\text{True positives} + \text{False negatives}}$
Specificity	The probability of a non-diseased person testing negative	$\text{Specificity} = \dfrac{\text{True negatives}}{\text{True negatives} + \text{False positives}}$
Positive predictive value	The probability that disease is present given a positive result	$\text{PPV} = \dfrac{\text{True positives}}{\text{True positives} + \text{False positives}}$
Negative predictive value	The probability that disease is absent given a negative result	$\text{NPV} = \dfrac{\text{True negatives}}{\text{True negatives} + \text{False negatives}}$
Positive likelihood ratio	A ratio representing the likelihood of having the disease given a positive result	$\text{LR+} = \dfrac{\text{Sensitivity}}{1 - \text{Specificity}}$
Negative likelihood ratio	A ratio representing the likelihood of having the disease given a negative result	$\text{LR-} = \dfrac{1 - \text{Sensitivity}}{\text{Specificity}}$

Major depressive episode	**Grief reaction (bereavement)**
• Five of the following 9 symptoms: Sleep disturbances, appetite change, low energy, psychomotor changes, low mood, anhedonia, guilt, focus/concentration difficulty, suicidal ideation • Low mood or anhedonia must be present • May occur in response to a variety of stressors, including loss of loved one • Duration ≥2 weeks • Social & occupational dysfunction • Suicidality related to hopelessness & worthlessness	• Normal reaction to loss • Feelings of loss & emptiness • Symptoms revolve around the deceased • Functional decline less severe • "Waves" of grief at reminders • Worthlessness, self-loathing, guilt & suicidality less common • Sad feelings are more specific to deceased • Thoughts of dying involve joining the deceased • Intensity decreases over time (weeks to months)



Factors impacting sample size		**Sample size needed**	**Note**
Expected magnitude of effect size	Large	Small	Easier to identify large effect
	Small	Large	More difficult to identify small effect
P-value (α)	Large	Small	Lenient cutoff for statistical significance
	Small	Large	Stringent cutoff for statistical significance
Power (1 – β)	Large	Large	High ability to detect difference
	Small	Small	Low ability to detect difference

α = rate of type I error; **β** = rate of type II error.

Indications for stress ulcer prophylaxis	
Any 1 factor	• Coagulopathy ○ Platelets <50,000/µL or ○ INR >1.5 or ○ Partial thromboplastin time > twice normal control • Mechanical ventilation >48 hours • GI bleeding or ulceration in last 12 months
≥2 factors	• Glucocorticoid therapy • >1 week ICU stay • Occult GI bleeding >6 days • Sepsis

Features of non-accidental trauma	
History	• Vague or changing details • Injury inconsistent with child’s developmental stage • Sibling described as responsible
Examination	• Injury inconsistent with history • Multiple fractures or bruises in different healing stages • Likely inflicted injuries (eg, cigarette burn) • Poorly kempt child • Bruises on neck, abdomen, or unusual sites • Injury to genitalia, hands, back, or buttocks
Caregiver behavior	• Argumentative or violent • Lack of emotional interaction with child • Inappropriate response to child's injury • Inappropriate delay in seeking medical care • Partial confession in causing injury

Manifestations of cyanide accumulation & toxicity

- Skin: **Flushing** (cherry-red color), cyanosis (occurs later)
- Central nervous system: Headache, **altered mental status**, seizures, coma
- Cardiovascular: Arrhythmias
- Respiratory: Tachypnea followed by respiratory depression, pulmonary edema
- Gastrointestinal: Abdominal pain, nausea, vomiting
- Renal: **Metabolic acidosis** (from lactic acidosis), renal failure

Features of tabes dorsalis	
Epidemiology	• Increased incidence of syphilis in men who have sex with men & HIV-infected patients • HIV-positive patients develop neurosyphilis more rapidly
Pathogenesis	• *Treponema pallidum* spirochetes directly damage the dorsal sensory roots • Secondary degeneration of the dorsal columns
Clinical findings	• Sensory ataxia • Lancinating pains • Neurogenic urinary incontinence • Associated with Argyll Robertson pupils

MAT is usually secondary to the following conditions:

1) hypoxia
2) chronic obstructive pulmonary disease (COPD)
3) hypokalemia
4) hypomagnesemia
5) coronary/ hypertensive/ valvular disease
6) medications (i.e., theophylline, aminophylline, isoproterenol)

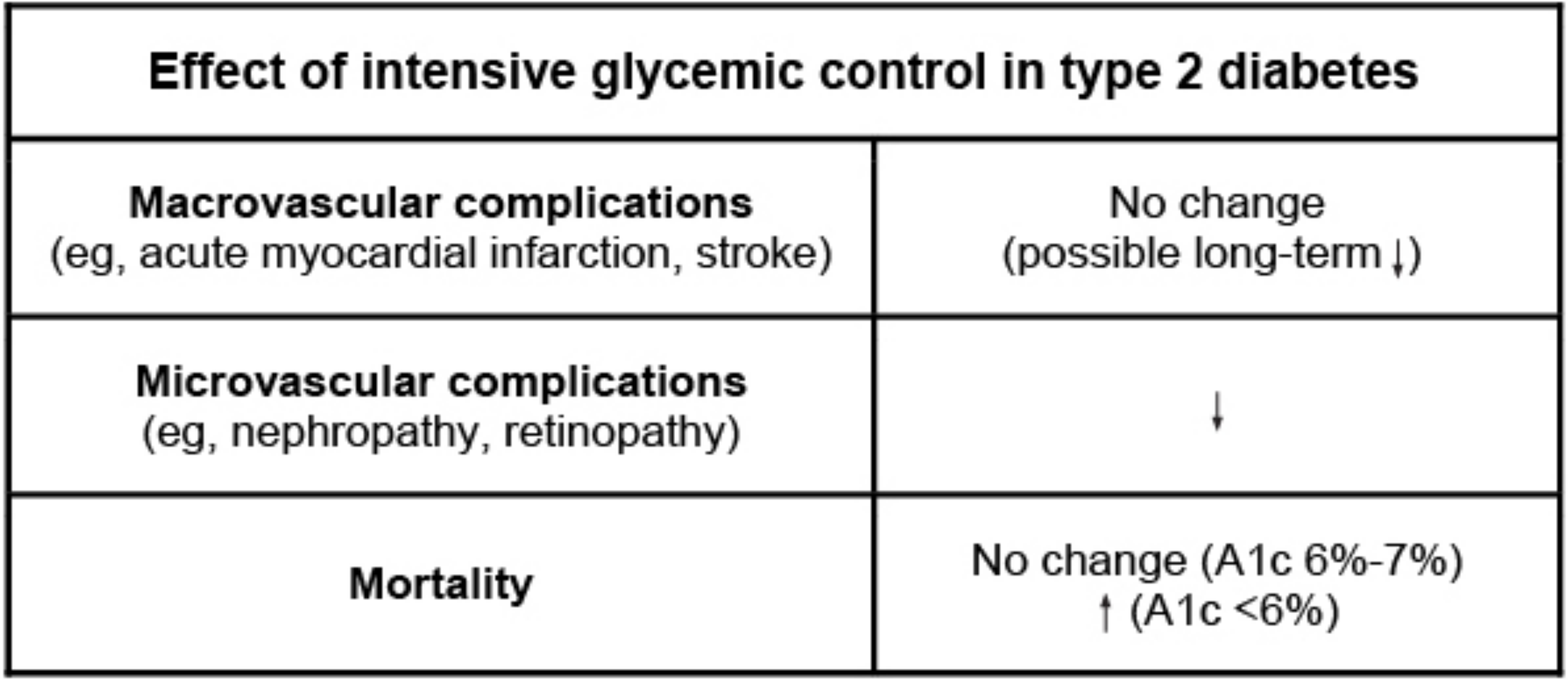
Pharmacotherapy for smoking cessation

Treatment	Indications	Adverse effects/contraindications
Long-acting NRT (nicotine patch)	• ↓ Cravings & daytime withdrawal symptoms • Long-acting may be combined with short-acting NRT ("patch plus")	• No significant effects, safe in almost all patients
Short-acting NRT (nasal spray, gum, lozenge, inhaler)		
Bupropion	• Decreases post-cessation weight gain • Good choice in patients with depression	• Contraindicated in patients with seizure or eating disorders
Varenicline	• More effective than bupropion or NRT	• Increased risk of cardiovascular events • Possible increased risk of depression or suicidal events

NRT= nicotine replacement therapy.

Contraindications to fibrinolysis with tPA include:

- Presence of active internal bleeding
- Bleeding diathesis (eg, platelets <100,000/μL)
- Hypodensity in >33% of an arterial territory on CT scan
- Presence of intracranial hemorrhage on CT scan
- Intracranial surgery in the last 3 months
- Blood pressure ≥185/110 mm Hg



Effect of intensive glycemic control in type 2 diabetes	
Macrovascular complications (eg, acute myocardial infarction, stroke)	No change (possible long-term ↓)
Microvascular complications (eg, nephropathy, retinopathy)	↓
Mortality	No change (A1c 6%-7%) ↑ (A1c <6%)

Clinical features of type 2 heparin-induced thrombocytopenia	
Clinical signs	Suspected with heparin exposure > 5 days **AND** any of the following: • Platelet count reduction > 50% from baseline • Arterial or venous thrombosis • Necrotic skin lesions at heparin injection sites • Acute systemic (anaphylactoid) reactions after heparin
Diagnostic evaluation	• **Serotonin release assay**: gold standard confirmatory test • Start treatment in suspected cases prior to confirmatory tests
Therapy	• Cessation of **ALL** heparin products. • Start a direct thrombin inhibitor (eg, argatroban) or fondaparinux (synthetic pentasaccharide)

Common causes of hemoptysis	
Pulmonary	• Bronchitis • Pulmonary embolism • Bronchiectasis • Lung cancer
Cardiac	• Mitral stenosis/acute pulmonary edema
Infectious	• Tuberculosis • Lung abscess
Hematologic	• Coagulopathy
Vascular	• Arteriovenous malformations
Systemic diseases	• Wegener granulomatosis • Goodpasture syndrome • Systemic lupus erythematosus, vasculitis

Suicide assessment in the emergency department – acute risk factors

- Suicidal thoughts, definite plan & intent/recent suicide attempt
- Past suicide attempt(s)
- Presence of psychiatric illness/severity of illness
- Impulsivity
- Hopelessness
- Marked anxiety/agitation
- Psychosis
- Intoxication (disinhibition) or substance use disorder
- Recent stressors
- Family history of suicide
- Lack of social support/living alone

Suicide assessment – ideation, intent & plan

Evaluate **ideation**

- Wish to die, not wake up (passive)
- Thoughts of killing self (active)
- Frequency, duration, intensity, controllability

Evaluate **intent**

- Strength of intent to attempt suicide; ability to control impulsivity
- Determine how close patient has come to acting on a plan (rehearsal, aborted attempts)

Evaluate **plan**

- Specific details: method, time, place, access to means (eg, weapons, pills), preparations (eg, gathering pills, changing will)
- Lethality of method
- Likelihood of rescue

Genetic testing for inherited breast cancer disorders (and more intensive screening) is recommended for individuals with:

- **2 1st-degree** relatives with breast cancer (including 1 before age 50)
- **3 1st- or 2nd-degree** relatives with breast cancer
- 1st- or 2nd-degree relative with **breast and ovarian** cancer
- 1st-degree relative with **bilateral** breast cancer
- Breast cancer in a male relative
- Ashkenazi Jewish women with any 1st- or 2nd-degree relative with breast or ovarian cancer

Reactive arthritis	
Preceding infection	• Gastroenteritis: *Salmonella, Shigella, Yersinia, Campylobacter, Clostridium difficile* • Genitourinary infection: *Chlamydia trachomatis*
Musculoskeletal	• Asymmetric, peripheral oligoarthritis • Enthesitis • Dactylitis
Extraarticular symptoms	• Ocular: Uveitis, conjunctivitis • Genital: Urethritis, cervicitis, prostatitis • Dermal: Keratoderma blennorrhagicum, circinate balanitis • Oral ulcers
Management	• Antibiotics (chlamydia, non-self-limiting gastrointestinal infection) • Nonsteroidal anti-inflammatory drugs (NSAIDs) • NSAID failure/contraindication ◦ Intraarticular glucocorticoids, then ◦ Systemic glucocorticoids, then ◦ Disease-modifying antirheumatic drugs

Primary dysmenorrhea	
Clinical features	Crampy lower abdominal pain with onset of menstrual bleeding
Treatment	First-line: Nonsteroidal anti-inflammatory drugs Second-line: Combined hormonal contraceptives Third-line: Evaluate for secondary causes if unresponsive to initial treatment

Clinical features of giardiasis	
High-risk groups	• Infants & young children, immunocompromised • Travelers • Cystic fibrosis or hypochlorhydria
Routes of transmission	• Contaminated water or food • Person to person through fecal-oral contamination or poor hygiene (eg, day-care centers) • Anal intercourse
Clinical presentation	• **Asymptomatic**: Cyst shedding for up to 6 months • **Acute**: Diarrhea, steatorrhea, flatulence, nausea, fever, weight loss • **Chronic**: Steatorrhea, profound weight loss, abdominal cramping, malaise, fatigue
Treatment & prevention	• Treatment not recommended for asymptomatic individuals unless high risk (eg, children in day-care center, immunocompromised) • Metronidazole, nitazoxanide, or tinidazole preferred for symptomatic individuals

Routes of transmission	• Contaminated water or food • Person to person through fecal-oral contamination or poor hygiene (eg, day-care centers) • Anal intercourse
Clinical presentation	• **Asymptomatic**: Cyst shedding for up to 6 months • **Acute**: Diarrhea, steatorrhea, flatulence, nausea, fever, weight loss • **Chronic**: Steatorrhea, profound weight loss, abdominal cramping, malaise, fatigue
Treatment & prevention	• Treatment not recommended for asymptomatic individuals unless high risk (eg, children in day-care center, immunocompromised) • Metronidazole, nitazoxanide, or tinidazole preferred for symptomatic individuals • Infection control (eg, contact isolation for patients in diapers, hand washing, diaper disposal) • Report suspected outbreak to health department • Water treatment (eg, boiling, iodine for hikers)

Tuberous sclerosis	
Pathophysiology	Autosomal dominant or de novo mutation of the *TSC1* or *TSC2* gene
Clinical features	**Dermatologic** • Hypopigmented macules ("ash-leaf spots") • Angiofibromas of the malar region • Shagreen patches **Neurologic** • Central nervous system lesions • Epilepsy • Cognitive disabilities • Autism & behavior problems **Cardiovascular** • Rhabdomyomas **Renal** • Angiomyolipomas

US Preventive Services Task Force recommendations for breast cancer screening

Definitely beneficial - recommended	• Mammogram every 2 years for women age 50–75 • Genetic counseling & possible testing for women with evidence of high-risk family history*
Possibly beneficial - individualize	• Mammogram in women before age 50
Definitely not beneficial - not recommended	• Self-breast examination at any age • Genetic testing for women without high-risk family history
Uncertain benefit	• Mammogram in women age >75 • Clinical breast examination • Breast magnetic resonance imaging

*** High-risk family history includes:**

- **Two 1st-degree relatives** with breast cancer, including 1 before age 50
- Three or more 1st- or 2nd-degree relatives with breast cancer
- 1st- or 2nd-degree relative with **breast & ovarian cancer**
- 1st-degree relative with **bilateral breast cancer**
- Breast cancer in a male relative
- Ashkenazi Jewish women with any 1st- or 2nd-degree relatives with breast or ovarian cancer

Stress hyperglycemia	
Pathogenesis	Increased cortisol/catecholamines & pro-inflammatory cytokines resulting in transiently elevated blood glucose in patients without known diabetes
Risk factors	• Intensive care unit admission • Temperature >39 C (102.2 F) • Severe illness • Sepsis • Central nervous system infection
Treatment	• Adults: Minimize glucose-containing intravenous fluids; consider insulin to achieve a blood glucose target of 140-180 mg/dL • Children: Inconclusive evidence for insulin therapy

American Diabetes Association criteria for the diagnosis of diabetes mellitus

- Random plasma glucose ≥200 mg/dL in patients with classic symptoms of hyperglycemia

OR

- Hemoglobin A1c ≥6.5%

OR

- Fasting plasma glucose ≥126 mg/dL

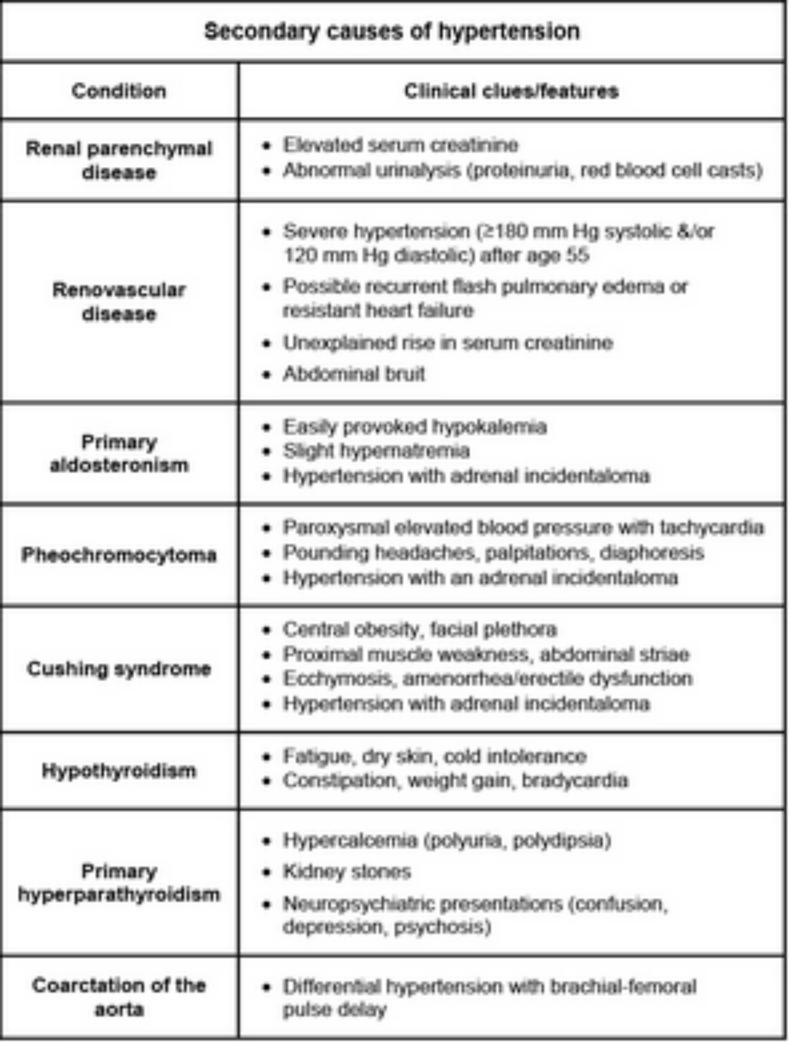
OR

- 2-hour plasma glucose ≥200 mg/dL during oral glucose tolerance test

Schizoaffective disorder	
DSM-5 criteria	• Major depressive or manic episode concurrent with symptoms of schizophrenia • Lifetime history of **delusions or hallucinations for ≥2 weeks in the absence of major depressive or manic episode** • Mood symptoms are present for majority of illness • Not due to substances or another medical condition
Differential diagnosis	• **Major depressive or bipolar disorder with psychotic features:** Psychotic symptoms occur exclusively during mood episodes • **Schizophrenia:** Mood symptoms present for relatively brief periods

Clinical clues to renovascular disease	
HTN-related symptoms	• Resistant HTN (uncontrolled despite 3-drug regimen) • Malignant HTN (with end-organ damage) • Onset of severe HTN (>180/120 mm Hg) after age 55 • Severe HTN with diffuse atherosclerosis • Recurrent flash pulmonary edema with severe HTN
Supportive evidence	**Physical examination** • Asymmetric renal size (>1.5 cm) • Abdominal bruit **Laboratory results** • Unexplained rise in serum creatinine (>30%) after starting ACE inhibitors or ARBs **Imaging results** • Unexplained atrophic kidney

ARBs = angiotensin receptor blockers; **HTN** = hypertension.



Secondary causes of hypertension	
Condition	**Clinical clues/features**
Renal parenchymal disease	• Elevated serum creatinine • Abnormal urinalysis (proteinuria, red blood cell casts)
Renovascular disease	• Severe hypertension (≥180 mm Hg systolic &/or 120 mm Hg diastolic) after age 55 • Possible recurrent flash pulmonary edema or resistant heart failure • Unexplained rise in serum creatinine • Abdominal bruit
Primary aldosteronism	• Easily provoked hypokalemia • Slight hypernatremia • Hypertension with adrenal incidentaloma
Pheochromocytoma	• Paroxysmal elevated blood pressure with tachycardia • Pounding headaches, palpitations, diaphoresis • Hypertension with an adrenal incidentaloma
Cushing syndrome	• Central obesity, facial plethora • Proximal muscle weakness, abdominal striae • Ecchymosis, amenorrhea/erectile dysfunction • Hypertension with adrenal incidentaloma
Hypothyroidism	• Fatigue, dry skin, cold intolerance • Constipation, weight gain, bradycardia
Primary hyperparathyroidism	• Hypercalcemia (polyuria, polydipsia) • Kidney stones • Neuropsychiatric presentations (confusion, depression, psychosis)
Coarctation of the aorta	• Differential hypertension with brachial-femoral pulse delay

Common oropharyngeal lesions in children

Diagnosis	Clinical features
Aphthous stomatitis ("canker sores")	• Recurrent ulcers on **anterior** oral mucosa (lips, cheeks, mouth floor, ventrum of the tongue) • No fever or systemic symptoms
Herpangina	• Vesicles & ulcers on **posterior** oropharynx • Fever
Herpes gingivostomatitis	• Vesicles & ulcers on **anterior** oral mucosa & around mouth • Fever
Group A streptococcal pharyngitis	• **Tonsillar** exudates • Fever, anterior cervical lymphadenopathy
Infectious mononucleosis	• **Tonsillar** exudates • Fever, diffuse cervical lymphadenopathy • +/- Hepatosplenomegaly

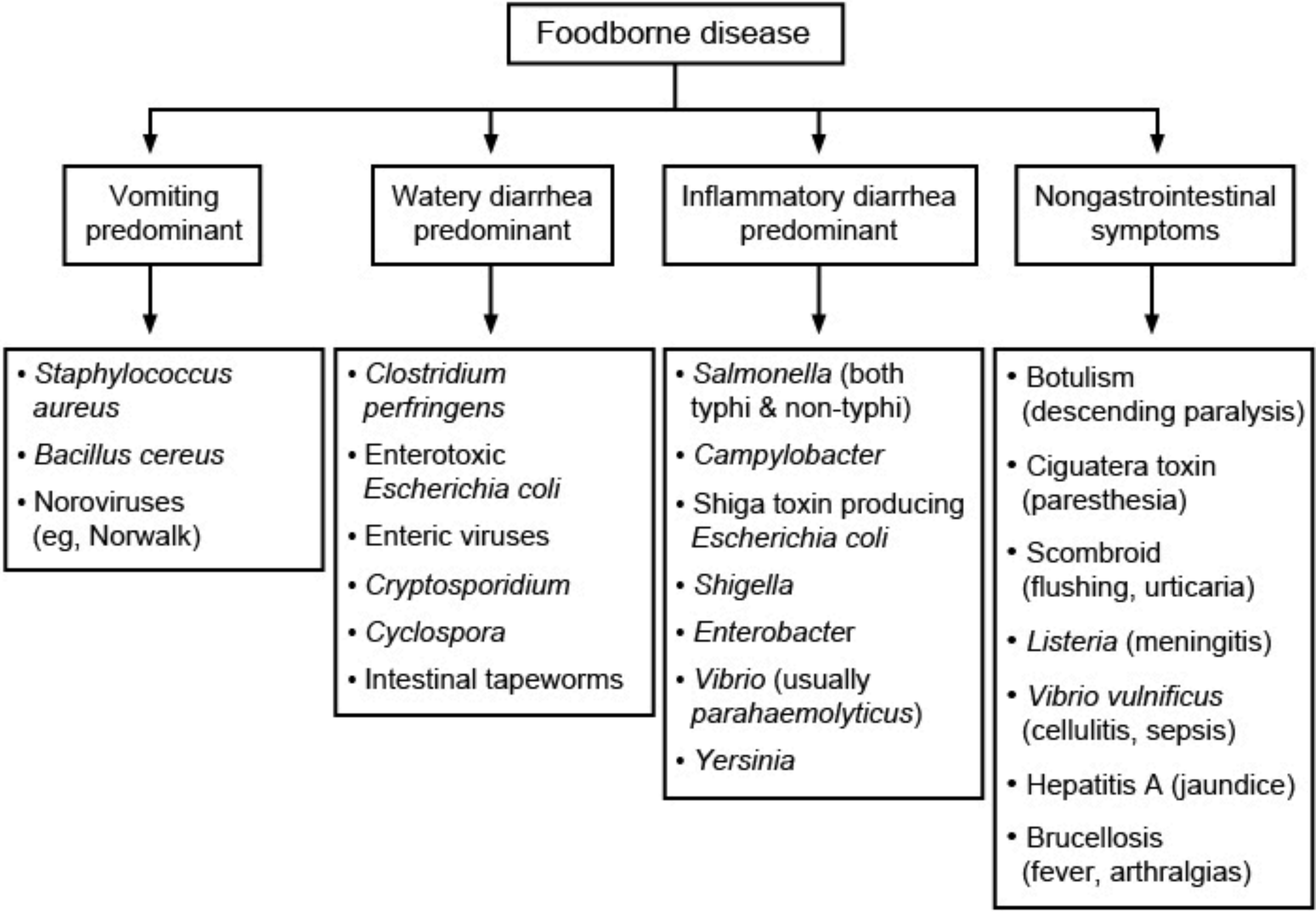
Changes in maternal thyroid axis during pregnancy	

TSH	• Low/suppressed during 1st trimester due to thyroid-stimulating actions of β-hCG
	• May have initial mild hyperthyroid state
	• Pregnancy reference range for TSH:
	  • 1st trimester: 0.1-2.5 μU/mL
	  • 2nd trimester: 0.2-3.0 μU/mL
	  • 3rd trimester: 0.3-3.0 μU/mL

Total T_4	• ↑ Total T_4 levels (1.5x prepregnancy state) due to ↑ thyroxine-binding globulin
Free T_4	• Free T_4 tends to be unreliably low due to assay artifact; pregnancy-specific reference range has not been established • Measurement of **total** T_4 is preferred over free T_4

This patient's TSH is within normal range if a trimester-specific normal range is used for interpretation. Trimester-specific ranges of TSH are as follows:

First trimester	0.1-2.5 µU/mL
Second trimester	0.2-3.0 µU/mL
Third trimester	0.3-3.0 µU/mL


Foodborne disease
Vomiting predominant
Watery diarrhea predominant
Inflammatory diarrhea predominant
Nongastrointestinal symptoms
• *Staphylococcus aureus*
• *Bacillus cereus*
• Noroviruses (eg, Norwalk)
• *Clostridium perfringens*
• Enterotoxic *Escherichia coli*
• Enteric viruses
• *Cryptosporidium*
• *Cyclospora*
• Intestinal tapeworms
• *Salmonella* (both typhi & non-typhi)
• *Campylobacter*
• Shiga toxin producing *Escherichia coli*
• *Shigella*
• *Enterobacter*
• *Vibrio* (usually *parahaemolyticus*)
• *Yersinia*
• Botulism (descending paralysis)
• Ciguatera toxin (paresthesia)
• Scombroid (flushing, urticaria)
• *Listeria* (meningitis)
• *Vibrio vulnificus* (cellulitis, sepsis)
• Hepatitis A (jaundice)
• Brucellosis (fever, arthralgias)

Norovirus can cause the following:

1. Asymptomatic infection
2. Fever with watery diarrhea - noninflammatory small-bowel process
3. Severe illness - fever, **vomiting**, headache, and other systemic symptoms

Iron deficiency anemia in children age <2	
Risk factors	• Prematurity • Lead exposure • Infants who consume: ◦ Low-iron formula ◦ Cow's milk, soy milk, or goat's milk before age 1 year ◦ Exclusive breastfeeding after age 6 months • Toddlers who consume: ◦ >24 ounces/day of milk ◦ <3 servings/day of iron-rich foods (eg, meat, fortified cereal)
Universal screening	• Complete blood count in all children at age 9-12 months
Treatment	• Empiric trial of iron supplementation

Risk factors for postoperative pulmonary complications

Patient risk factors	Procedural risk factors
• Age >50	• Procedures lasting >3 hours
• Severe COPD	• Emergency surgery
• Current cigarette smoking	• Head/neck surgery
• Obstructive sleep apnea	• Aortic/vascular surgery
• Pulmonary hypertension	• Thoracic/upper abdominal surgery
• Congestive heart failure	• Neurosurgery
• Poor general health (ASA* >2)	• Use of long-acting neuromuscular blockade (eg, pancuronium)
• Metabolic factors (eg, serum albumin ≤3 g/dL)	

*American society of anesthesiologists (ASA) physical status classification system

Postoperative pulmonary complications

- Atelectasis
- Bronchospasm
- Chronic lung disease exacerbation
- Infection
- Prolonged mechanical ventilation & respiratory failure

(Choice E) Preoperative pulmonary function tests (PFTs) are recommended:

- Prior to lung resection to estimate postoperative lung volumes
- To optimize preoperative chronic obstructive pulmonary disease (COPD) control if baseline clinical status cannot be determined
- To evaluate the cause of dyspnea or exercise intolerance (eg, cardiac disease vs deconditioning)

Vaccines recommended for adults with HIV

Vaccine	**Indications**
HAV	• Chronic liver disease (including HBV and HCV) • Men who have sex with men • IV drug users
HBV	• All patients without documented immunity to HBV
HPV	• Men & women age 9-26
Influenza	• Annually for all patients
Meningococcus	• All patients age 11-18 • Large groups living in close proximity (college students, military recruits, incarcerated patients) • Asplenia or complement deficiency
Pneumococcus	• PCV13 once • PPSV23 8 weeks later, then every 5 years

HBV	• All patients without documented immunity to HBV
HPV	• Men & women age 9-26
Influenza	• Annually for all patients
Meningococcus	• All patients age 11-18 • Large groups living in close proximity (college students, military recruits, incarcerated patients) • Asplenia or complement deficiency
Pneumococcus	• PCV13 once • PPSV23 8 weeks later, then every 5 years
Tetanus, diphtheria & pertussis	• Tdap once • Repeat Tdap for women during each pregnancy • Td every 10 years following Tdap
Live vaccines (MMR, varicella, zoster, live-attenuated influenza) are contraindicated if CD4$^+$ cell count <200/µL	

HAV = hepatitis A virus; **HBV** = hepatitis B virus; **HCV** = hepatitis C virus; **HPV** = human papillomavirus; **IV** = intravenous; **MMR** = measles, mumps & rubella; **PCV13** = 13-valent pneumococcal conjugate vaccine; **PPSV23** = 23-valent pneumococcal polysaccharide vaccine; **Td** = tetanus-diphtheria toxoid booster; **Tdap** = tetanus-diphtheria-acellular pertussis.

Anatomy	Most commonly affects **infrarenal** aorta (≥3 cm)
Risks	• **Smoking** • Male sex • Older • White ethnicity • Family history of AAA • Atherosclerotic disease
Screening	Abdominal ultrasound in men age 65-75 who have ever smoked
Symptoms	• Mostly asymptomatic • May have abdominal, back, or flank pain • Lower limb ischemia &/or thromboembolism • Rupture often presents with abdominal distension & shock

Management	• **Smoking cessation**
	• Aspirin & statin therapy
	• Elective repair recommended for:
	  ○ Large (≥5.5 cm) aneurysms
	  ○ Rapidly enlarging aneurysms (≥0.5 cm in 6 months)
	  ○ AAA associated with peripheral artery disease or aneurysm

Follow-up imaging	• Medium (4-5.4 cm): Ultrasound every 6-12 months • Smaller: Ultrasound every 2-3 years

Emergency contraception options

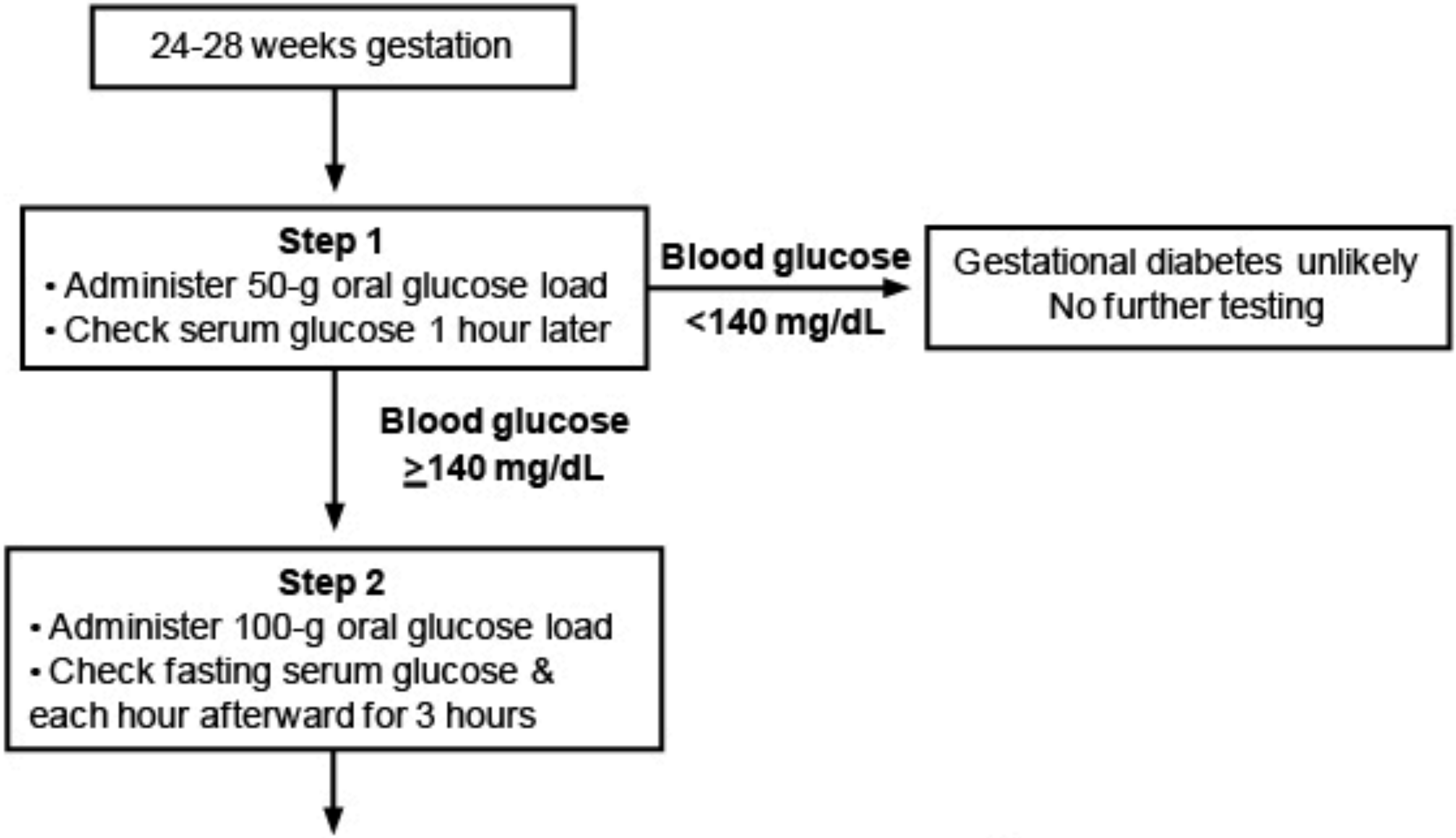
Method	Timing after intercourse	Expected pregnancies prevented	Contraindications
Copper intrauterine device	0-120 hours	99%	• Active pelvic infection or cervicitis • Undiagnosed vaginal bleeding • Wilson's disease
Ulipristal pill	0-120 hours	≥85%	• Renal/hepatic impairment • Uncontrolled asthma
Levonorgestrel pill	0-72 hours	85%	None
***OCPs**	0-72 hours	75%	None

*Oral estrogen/progestin contraceptives containing levonorgestrel or norgestrel

Postexposure prophylaxis for sexual assault

Infection	Medication
HIV	3-drug regimen (eg, tenofovir-emtricitabine with raltegravir)
Hepatitis B	Hepatitis B vaccine +/- hepatitis B immune globulin
Chlamydia	Azithromycin
Gonorrhea	Ceftriaxone
Trichomonas vaginalis	Metronidazole

Two-step approach for screening & diagnosing gestational diabetes mellitus



24-28 weeks gestation

Step 1
- Administer 50-g oral glucose load
- Check serum glucose 1 hour later

Blood glucose <140 mg/dL

Gestational diabetes unlikely
No further testing

Blood glucose ≥140 mg/dL

Step 2
- Administer 100-g oral glucose load
- Check fasting serum glucose & each hour afterward for 3 hours

Diagnosis of gestational diabetes mellitus (≥2 abnormal values)		
Blood glucose level	**Carpenter & Coustan**	**NDDR**
Fasting	≥95 mg/dL (5.3 mmol/L)	≥105 mg/dL (5.3 mmol/L)
1-hour	≥180 mg/dL (10 mmol/L)	≥190 mg/dL (10.6 mmol/L)
2-hour	≥155 mg/dL (8.6 mmol/L)	≥165 mg/dL (9.2 mmol/L)
3-hour	≥140 mg/dL (7.8 mmol/L)	≥145 mg/dL (8 mmol/L)

NDDR = National Diabetes Group Criteria.

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Gestational diabetes mellitus	
Target blood glucose levels	• Fasting ≤95 mg/dL (5.3 mmol/L) • 1-hour postprandial ≤140 mg/dL (7.8 mmol/L) • 2-hour postprandial ≤120 mg/dL (6.7 mmol/L)
Treatment	• 1st-line: Dietary modifications • 2nd-line: Insulin, oral agents (eg, metformin, glyburide)

UTI antibiotics in pregnancy

Recommended	Contraindicated
• Nitrofurantoin • Amoxicillin • Amoxicillin-clavulanate • Cephalexin	• Tetracyclines • Fluoroquinolones • Trimethoprim-sulfamethoxazole

Pyelonephritis antibiotics in pregnancy

Mild/Moderate

- Third-generation cephalosporins
- Aztreonam
- Ampicillin & gentamicin

Severe

(Urinary retention, immunocompromised, urosepsis)

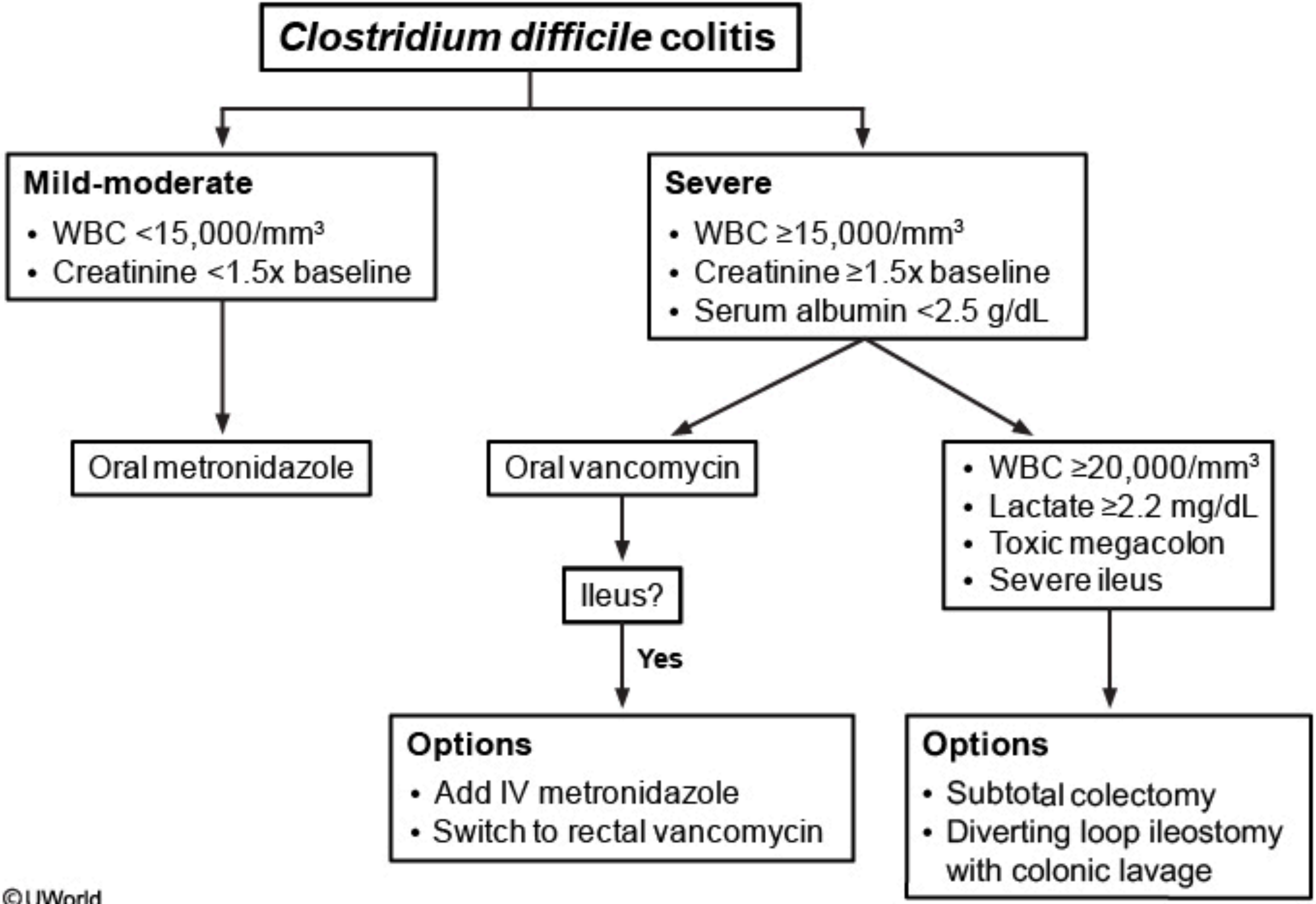
- Piperacillin/tazobactam
- Ticarcillin/clavulanate
- Carbapenems

Acute rheumatic fever		
Epidemiology	• Peak incidence: Age 5-15 • Twice as common in girls	
Clinical features	**Major**	• **J**oints (migratory arthritis) • ♥ (Carditis) • **N**odules (subcutaneous) • **E**rythema marginatum • **S**ydenham chorea
	Minor	• Fever • Arthralgias • Elevated erythrocyte sedimentation rate/ C-reactive protein • Prolonged PR interval
Late sequelae	Mitral regurgitation/stenosis	
Prevention	Penicillin for **group A streptococcal** (*Streptococcus pyogenes*) pharyngitis	

diagnosis is usually made by clinical, radiographic, and immunologic criteria, which include the following:

1. A history of asthma.
2. Immediate skin test reactivity to *Aspergillus* antigen.
3. Precipitating serum antibodies to *Aspergillus fumigatus*.
4. Serum total IgE concentration of greater than 1000 ng/mL.
5. Peripheral blood eosinophilia greater than 500 per cubic millimeter.
6. Lung infiltrates, usually involving the upper lobes.
7. Central bronchiectasis.

A skin prick test for *Aspergillus* should be performed initially in all asthmatic patients suspected of having ABPA. If the skin prick test is positive, serum total IgE levels and precipitating serum antibodies to *Aspergillus fumigatus* should be measured. If the skin prick test is negative, the diagnosis of ABPA is extremely unlikely.


Clostridium difficile colitis
Mild-moderate
• WBC <15,000/mm³
• Creatinine <1.5x baseline
Oral metronidazole
Severe
• WBC ≥15,000/mm³
• Creatinine ≥1.5x baseline
• Serum albumin <2.5 g/dL
Oral vancomycin
Ileus?
Yes
Options
• Add IV metronidazole
• Switch to rectal vancomycin
• WBC ≥20,000/mm³
• Lactate ≥2.2 mg/dL
• Toxic megacolon
• Severe ileus
Options
• Subtotal colectomy
• Diverting loop ileostomy with colonic lavage

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diarrhea to fulminant colitis with toxic megacolon. Mild colitis typically presents as watery diarrhea (sometimes up to 10-15 times a day), low-grade fever, abdominal pain, and leukocytosis. Patients with severe disease may not have profuse diarrhea but often have the following clinical features:

- Temperature >38.3 C (100.9 F)
- White blood cells (WBC) >15,000/µL
- Creatinine >1.5x baseline
- Serum albumin <2.5 g/dL

Prevention & control of *Clostridium difficile* in institutional settings

Infection control	• Monitor infection rates in hospital • Contact isolation • Wash hands with soap & water (**not** alcohol-based hand rub) • Disinfect or use disposable stethoscopes
Hospital environment	• Clean patient room & environment with effective agent (eg, hypochlorite solution) • Consider cleaning medical equipment (eg, blood pressure cuffs)
Antibiotic restriction	• Possibly restrict use of clindamycin, fluoroquinolones & cephalosporins • Consider using **aminoglycosides or trimethoprim-sulfamethoxazole** instead of fluoroquinolones

Bronchiolitis	
Epidemiology	• Age <2 years • RSV most common cause
Clinical presentation	• Antecedent nasal congestion/discharge & cough • Wheezing/crackles & respiratory distress (eg, tachypnea, retractions, nasal flaring)
Treatment	Supportive care
Prevention	Palivizumab for infants with the following conditions: • Preterm birth <29 weeks gestation • Chronic lung disease of prematurity • Hemodynamically significant congenital heart disease
Complications	• Apnea (especially infants age <2 months) • Respiratory failure

RSV = respiratory syncytial virus.

Lactational mastitis	
Pathogenesis	Skin flora (eg, *Staphylococcus aureus*) enters ducts through nipple & multiplies in stagnant milk
Risk factors	• Past history of mastitis • Engorgement & inadequate milk drainage due to: ○ Sudden increase in sleep duration ○ Replacing nursing with formula or pumped breast milk ○ Weaning ○ Pressure on the duct (tight bra or clothing, prone sleeping) ○ Cracked or clogged nipple pore ○ Poor latch
Clinical presentation	• Fever • Firm, red, tender, swollen quadrant of unilateral breast • +/- Myalgia, chills, malaise
Treatment	• Analgesia • Frequent breastfeeding or pumping • Antibiotics

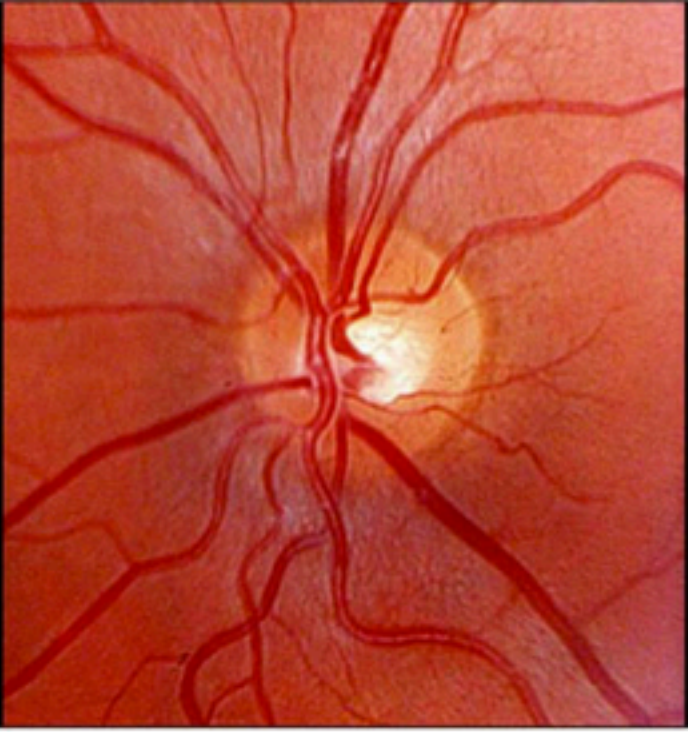
radiographs. In light of the limited sensitivity of initial x-rays, patients with suspected scaphoid fracture should have additional imaging:

- MRI (or CT) of the wrist
- Repeat radiographs in 7-10 days
- Radioscintigraphy bone scan in 3-5 days

Headache red flags	Common diagnoses
Sudden onset, worst headache of life	• **Subarachnoid hemorrhage**
Age ≥50	• Mass lesion • Giant cell arteritis
Increases frequency or severity	• Mass lesion • Subdural hematoma • **Medication overuse**
Worsens with exercise or sexual intercourse	• Mass lesion • Subarachnoid hemorrhage
Focal neurologic signs, papilledema	• **Mass lesion** • Idiopathic intracranial hypertension (pseudotumor cerebri) • Arteriovenous malformation
Personality changes	• **Central nervous system infection** • Mass lesion • Intracerebral hemorrhage
Systemic symptoms (eg, fever, rash)	• Encephalitis • Meningitis

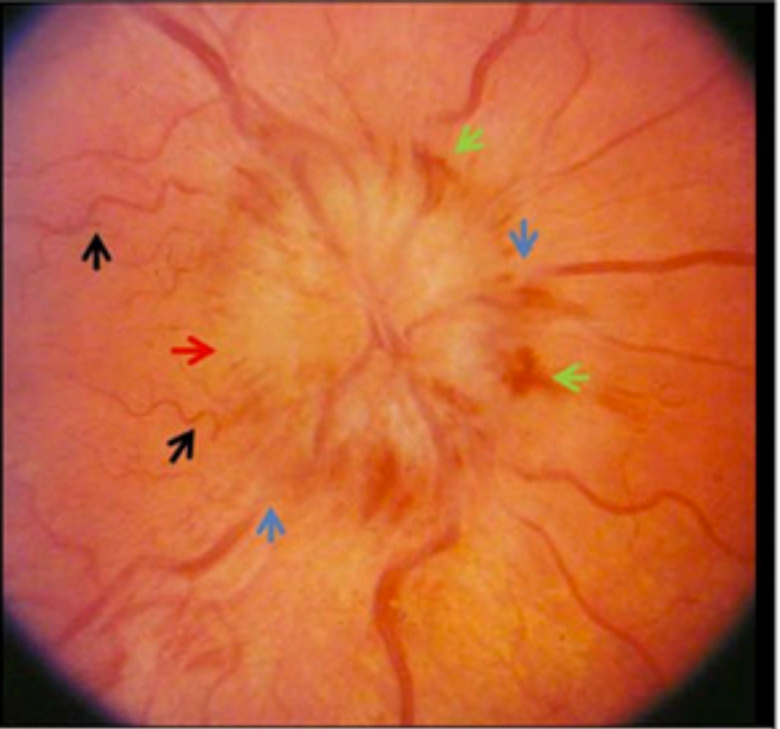
Papilledema occurs when elevated intracranial pressure (ICP) is transmitted to the optic nerve. Some of the most common causes of **papilledema** include the following:

- Mass lesions
- Cerebral edema
- Increased cerebrospinal fluid (CSF) production
- Decreased CSF outflow (venous thrombosis)
- Idiopathic intracranial hypertension (pseudotumor cerebri)



Normal retina:

- Clear disc margins
- Clear visualization of large vessels
- Faint linear small veins



Papilledema

- Blurred disc margins →
- Obscuration of vessels →
- Splinter hemorrhages →
- Serpentine engorgement of small veins →

Streptococcal tonsillopharyngitis	
Signs & symptoms	• Abrupt onset of sore throat • Fever • Absence of cough & viral symptoms • Abdominal pain/vomiting
Examination	• Palatal petechiae • Tonsillar erythema & **exudates** • **Tender anterior cervical nodes**
Diagnosis	• Throat culture • Rapid streptococcal antigen test
Treatment	• **Penicillin** or **amoxicillin**
Complications	• Peritonsillar abscess • Cervical lymphadenitis • Rheumatic fever • Post-streptococcal glomerulonephritis

Penicillin is the treatment of choice for streptococcal pharyngitis, as *Streptococcus pyogenes* remains very sensitive to penicillin. The benefits of antibiotic therapy include:

1. Decreased symptom severity and duration
2. Prevention of spread to close contacts
3. Prevention of suppurative complications (eg, peritonsillar abscess, cervical lymphadenitis)
4. Prevention of **acute rheumatic fever**

Penicillin is the treatment of choice for streptococcal pharyngitis, as *Streptococcus pyogenes* remains very sensitive to penicillin. The benefits of antibiotic therapy include:

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4. Prevention of **acute rheumatic fever**

Optimal duration of **oral penicillin** is **10 days** both to ensure full eradication of bacterial carriage and to prevent rheumatic fever. Daily long-term prophylactic antibiotics are indicated for patients with a history of rheumatic fever to prevent recurrence of the disease.

Clinical features of subarachnoid hemorrhage	
Risk factors	• Hypertension • Smoking, moderate to heavy alcohol use • Family history • Sympathomimetic drugs
Clinical presentation	• Most commonly due to ruptured saccular (“berry”) aneurysm • Severe & sudden onset of a headache different from previous headache pattern or described as “the worst headache of my life” • Nausea, vomiting, brief loss of consciousness, focal neurologic deficits, or meningismus
Diagnosis	• Noncontrast head CT >90% sensitive within 2-6 hours of SAH onset • Lumbar puncture required to exclude SAH definitively in patients with negative head CT • Xanthochromia confirms diagnosis (usually >6 hours from SAH onset) • Cerebral angiography to identify bleeding source

The interpretation of the test is based on the size of induration (not erythema) and the likelihood of presence of infection in various clinical settings.

An induration of 5 mm or more is positive in the following:

1. patients with recent close contact with a tuberculosis patient
2. patients with fibrotic changes on chest x-ray consistent with tuberculosis
3. patients with HIV infection
4. organ transplant recipients
5. patients on chronic steroid therapy or other immunocompromised disease

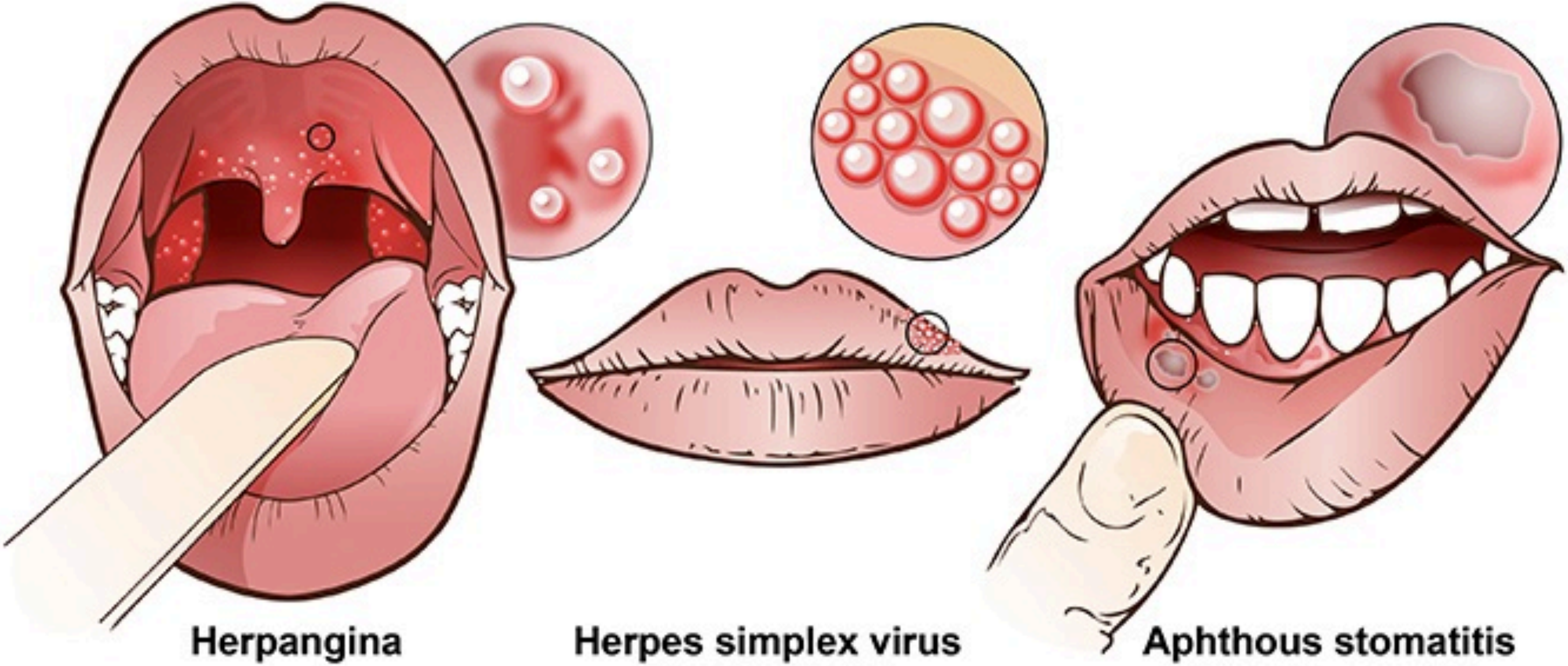
An induration of 10 mm or more is positive in the following:

1. persons from countries with a high prevalence of tuberculosis (residing in United States for less than five years)
2. intravenous drug users
3. homeless persons or persons living in shelters
4. residents and employees of correctional institutions (prisons, etc.) and healthcare facilities (hospitals, nursing homes, skilled nursing facilities)
5. healthcare workers, including nurses and physicians
6. patients with a medical disorder that places them at high risk for the development of active tuberculosis. This includes patients with diabetes mellitus, chronic renal failure, silicosis, gastrectomy, malignancy, weight loss of more than 10% of the ideal body weight, and children less than 4 years of age.

Diagnostic features of Lewy body dementia	
Central (required)	Progressive cognitive decline, dementia
Core	Fluctuating cognition Visual hallucinations (detailed, recurrent) Spontaneous parkinsonism features
Suggestive	REM sleep disorder (eg, vivid dreams) Severe neuroleptic sensitivity SPECT or PET showing low dopamine transporter uptake in basal ganglia
Supportive	Repeated falls Syncope or near-syncope Severe autonomic dysfunction Hallucinations or delusions Depression
Conflicting (make LBD less likely)	Neuroimaging showing cerebrovascular disease Parkinsonism appearing first with dementia later Other physical or brain condition that explains clinical presentation

LBD = Lewy body dementia; PET = positron emission tomography;
REM = rapid eye movement; SPECT = single-photon emission computed tomography.

Differential diagnosis of oral lesions



Herpangina

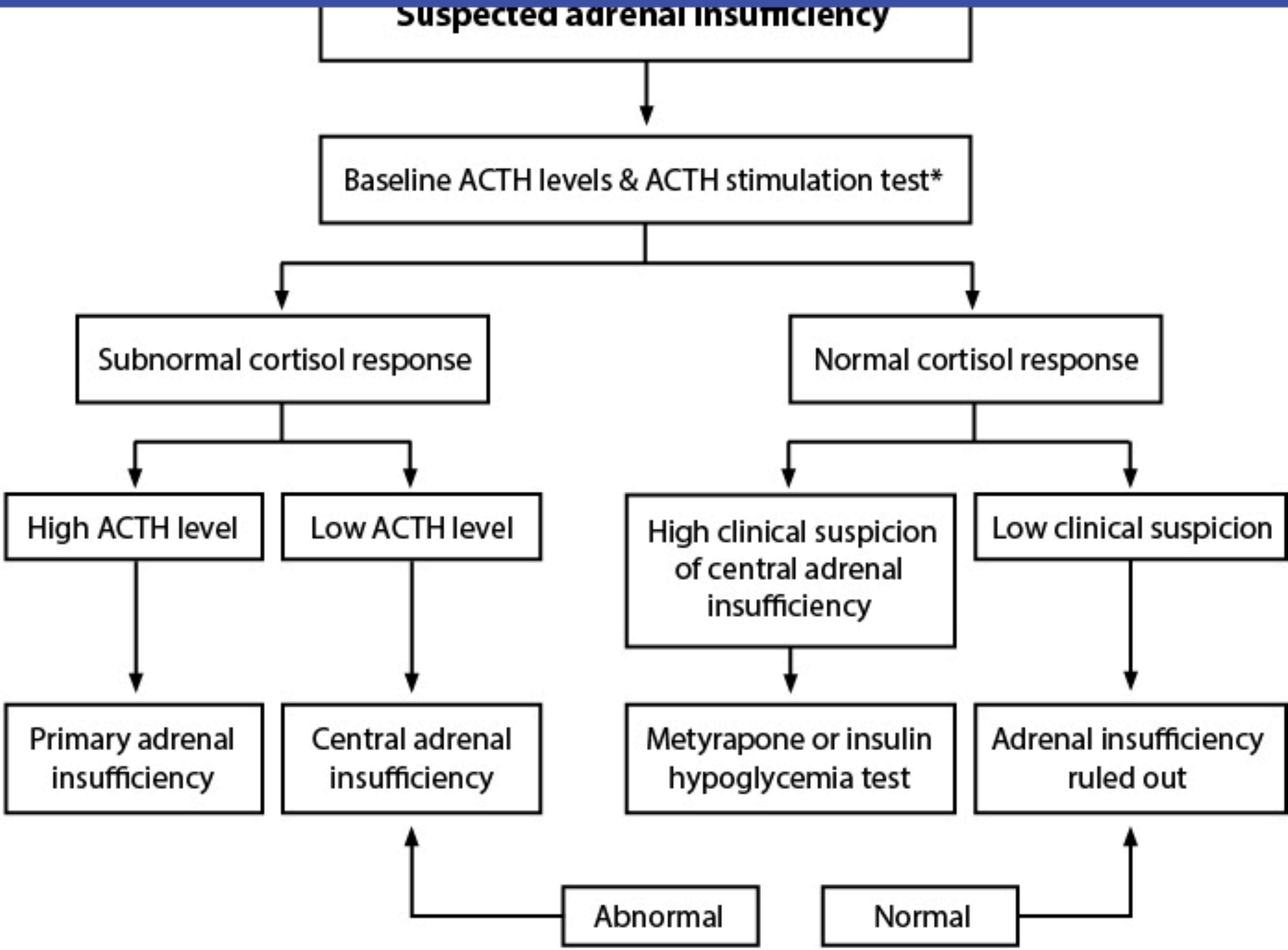
Vesicles on posterior oropharynx from coxsackievirus

Herpes simplex virus ("cold sore")

Cluster of vesicles on vermillion border

Aphthous stomatitis ("canker sore")

Shallow gray ulcer


Suspected adrenal insufficiency
Baseline ACTH levels & ACTH stimulation test*
Subnormal cortisol response
Normal cortisol response
High ACTH level
Low ACTH level
High clinical suspicion of central adrenal insufficiency
Low clinical suspicion
Primary adrenal insufficiency
Central adrenal insufficiency
Metyrapone or insulin hypoglycemia test
Adrenal insufficiency ruled out
Abnormal
Normal

* Some experts suggest measuring 8:00 AM cortisol with ACTH as the initial tests for evaluation of adrenal insufficiency and performing stimulation test(s) for adrenal reserve only if the initial results are borderline or inconclusive.

Anovulatory uterine bleeding in menopausal transition	
Pathophysiology	• Oocyte depletion & abnormal follicular development • Failure of ovary to secrete progesterone
Clinical presentation	Periods of amenorrhea followed by irregular unpredictable bleeding
Evaluation	Endometrial biopsy for any of the following conditions: • Age ≥45 with suspected anovulatory bleeding • Age <45 with risk factors for unopposed estrogen (obesity, polycystic ovary syndrome), failed medical management, or persistent abnormal bleeding
Treatment options	• Cyclic progestin therapy • Low-dose oral contraceptive pill • Levonorgestrel intrauterine device • Cyclic hormonal therapy

Asymptomatic subclinical hypothyroidism does not require treatment. Treatment is warranted in the presence of:

1. antithyroid antibodies
2. an abnormal lipid profile
3. symptoms of hypothyroidism
4. ovulatory and menstrual dysfunction

Likelihood ratio	**Interpretation**
>10	Strong evidence to rule in the disease
5-10	Moderate evidence to rule in the disease
2-5	Weak evidence to rule in the disease
0.5-2	No evidence to rule in or rule out the disease
0.2-0.5	Weak evidence to rule out the disease
0.1-0.2	Moderate evidence to rule out the disease
<0.1	Strong evidence to rule out the disease

- LR+ = sensitivity / (1 - specificity). This is the probability of a patient with the disease testing positive divided by the probability of a patient without the disease testing positive. It is equivalent to: (true positive rate/false positive rate).
- LR- = (1 - sensitivity) / specificity. This is the probability of a patient with the disease testing negative divided by the probability of a patient without the disease testing negative. It is equivalent to: (false negative rate / true negative rate).

LRs can range from 0 to infinity. A test result with a LR >1 suggests disease presence; the **higher** the LR, the **more likely** the disease presence. A test result with a LR <1 argues against the disease; the lower the LR, the less likely the disease presence. There are general guidelines for LR interpretation (Table).

Exceptions to confidentiality

- Harm to self or others
- Physical or sexual abuse
- Neglect
- Violent injuries (eg, gunshot or stab wounds)

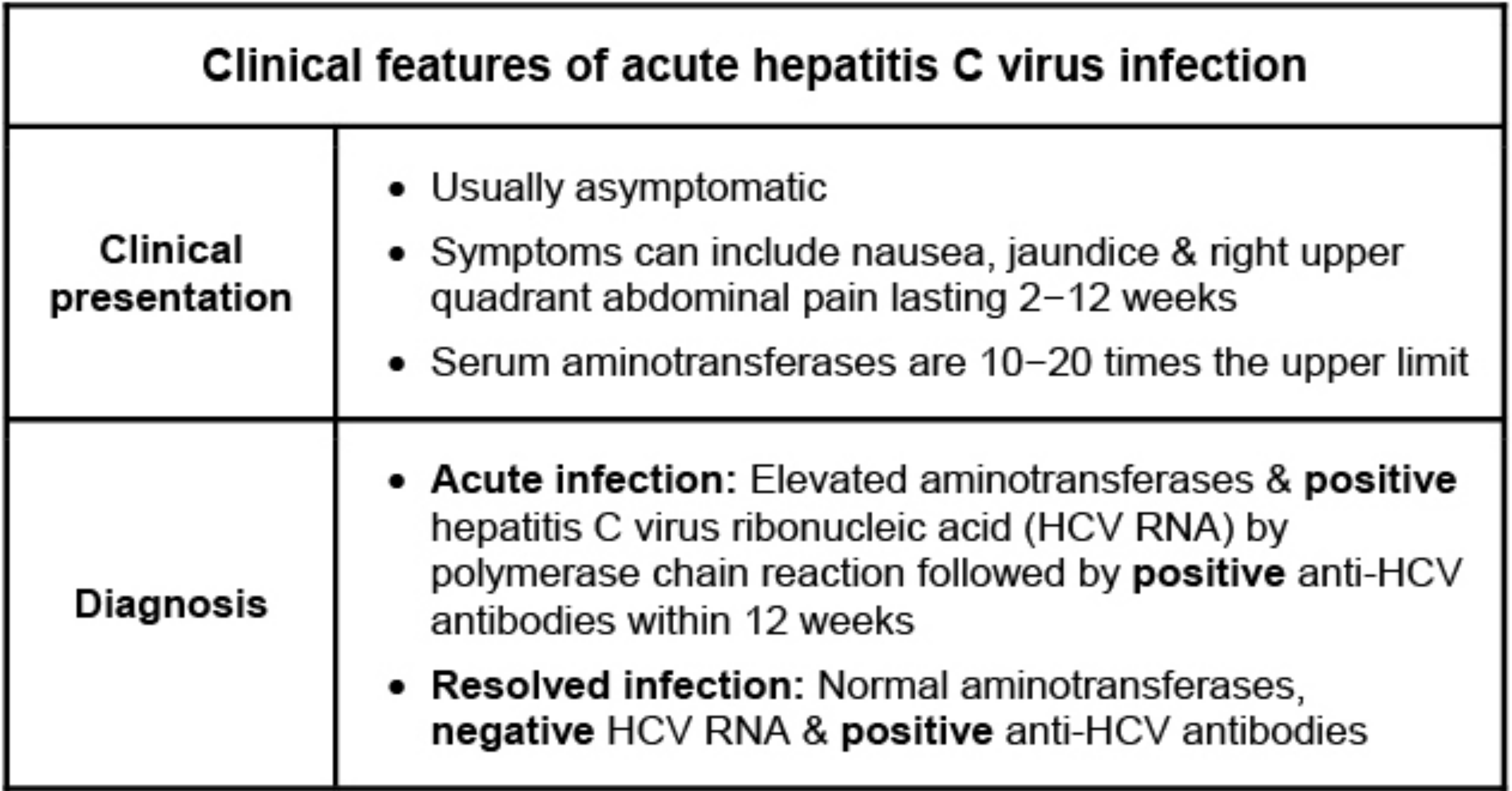
Acute stress disorder

DSM-5

- Exposure to life-threatening trauma (combat, physical or sexual assault, natural & manmade disasters, severe accidents/illness)
- Nine or more of the following symptoms from any of 5 categories:
  - **Intrusion symptoms**: Intrusive memories, nightmares, flashbacks, intense psychological distress or physiological reactions to reminders
  - **Negative mood**: Inability to experience positive emotions
  - **Dissociative symptoms**: Amnesia for the event, altered sense of reality, numb detachment
  - **Avoidance symptoms**: Avoids thoughts, feelings & external reminders of the event (people, places, situations)
  - **Arousal symptoms**: Sleep disturbance, irritable/angry outbursts, hypervigilance, impaired concentration, exaggerated startle response
- Duration: **3 days to 1 month** after trauma exposure

Treatment

- Trauma-focused cognitive-behavioral therapy
- Short-term benzodiazepine for agitation or insomnia



Clinical features of acute hepatitis C virus infection	
Clinical presentation	Usually asymptomatic Symptoms can include nausea, jaundice & right upper quadrant abdominal pain lasting 2−12 weeks Serum aminotransferases are 10−20 times the upper limit
Diagnosis	**Acute infection:** Elevated aminotransferases & **positive** hepatitis C virus ribonucleic acid (HCV RNA) by polymerase chain reaction followed by **positive** anti-HCV antibodies within 12 weeks **Resolved infection:** Normal aminotransferases, **negative** HCV RNA & **positive** anti-HCV antibodies

A detailed physical examination can provide clues to the presence and severity of valvular aortic stenosis (AS). The following examination findings indicate **severe AS**:

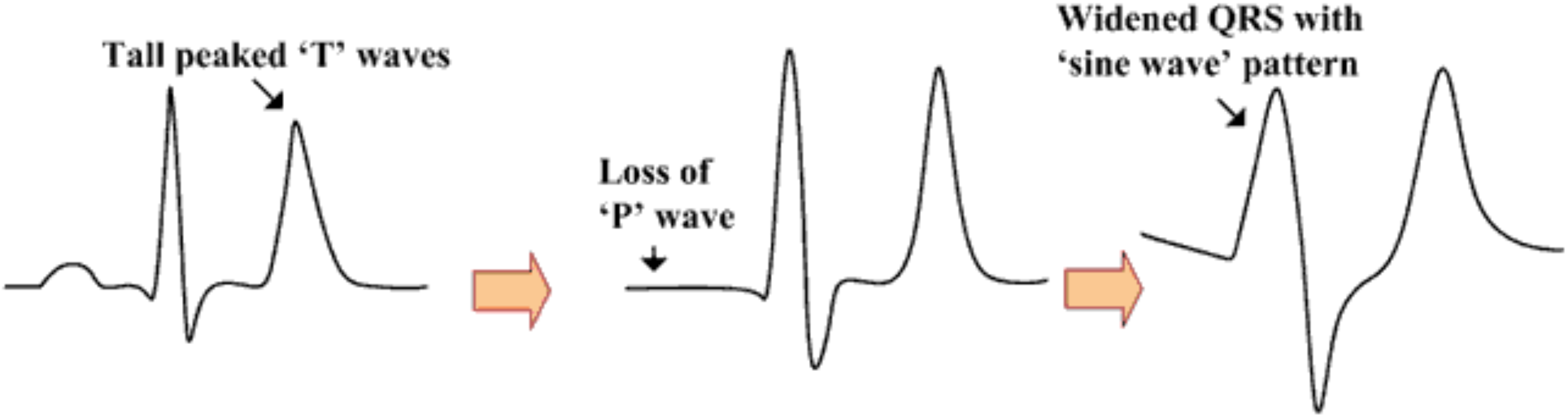
- **A soft, single S2**
- A delayed and diminished carotid pulse ("**parvus and tardus**")
- **Loud and late-peaking systolic murmur**

	Null hypothesis (H_0) is true	**Null hypothesis (H_0) is false**
Reject null hypothesis	Type I error (false positive)	Correct
Fail to reject null hypothesis	Correct	Type II error (false negative)

A **type II error** occurs when a study **fails** to reject a null hypothesis (H_0) that is false. The probability of a type II error (β) is related to how much **power** a study has to detect a difference when a difference actually exists. Studies with a larger **sample size** have greater power to detect differences. The formula for power is: power = 1 – β (or, equivalently, β = 1 – power), with β ranging from 0–1. As power increases, β decreases; and as power decreases, β increases. For this example, the smaller study has less power than the larger study and so would be less likely to detect a difference between the groups, increasing the chance of a type II error.

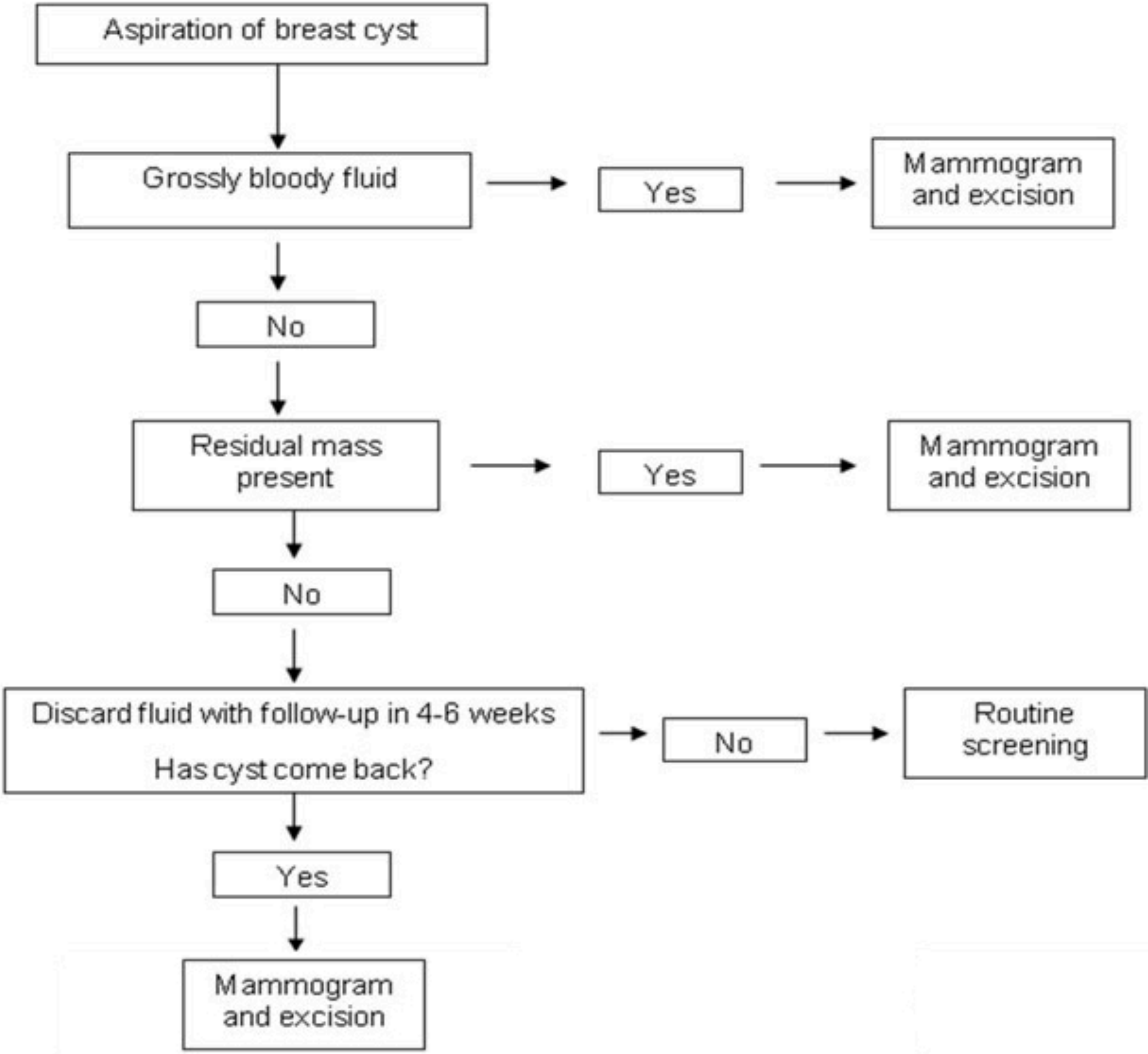
Reversible causes of falls in the elderly & potential interventions	
Vision	• Correction of visual acuity if < 20/60 • Cataract removal • Ample lighting without glare
Postural blood pressure	• Removal of offending medications • Modification of salt & fluid intake • Behavioral strategies (slow change in position) • Compression stockings
Medication use	• Removal of offending medications (eg, benzodiazepines, neuroleptics, sleep medications) • Reduction of polypharmacy
Balance & gait (get up & go test)	• Environmental modifications • Physical therapy for gait & balance training • Assessment for assistive device • Exercise program
Targeted cardiovascular, musculoskeletal & neurologic examination	• Diagnose & treat underlying cause if identified
Home hazard evaluation	• Environmental modifications (eg, adjust poor lighting, remove loose rugs, place non-slip bathmats & rails)

On ECG, hyperkalemia initially manifests as peaked T waves and subsequently as prolongation of the PR interval and QRS complex, disappearance of the P waves, and eventually a sine wave. Various arrhythmias, including sinus bradycardia (as seen in this patient), are also seen with hyperkalemia.



In this case, the most appropriate next step in management is intravenous calcium gluconate. Calcium rapidly stabilizes the cardiac membrane potential in patients who have severe ECG manifestations of hyperkalemia (e.g. prolonged PR interval, prolonged QRS interval, or disappearance of P waves). However, the effect of calcium gluconate is short lived, so other treatments are subsequently necessary to lower the serum potassium level.

Complications of infective endocarditis	
Cardiac	• Valvular insufficiency – common cause of death • Perivalvular abscess • Conduction abnormalities • Mycotic aneurysm
Neurologic	• Embolic stroke • Cerebral hemorrhage • Brain abscess • Acute encephalopathy or meningoencephalitis
Renal	• Renal infarction • Glomerulonephritis • Drug-induced acute interstitial nephritis from therapy
Musculoskeletal	• Vertebral osteomyelitis • Septic arthritis • Musculoskeletal abscess


Aspiration of breast cyst
Grossly bloody fluid
Yes
Mammogram and excision
No
Residual mass present
Yes
Mammogram and excision
No
Discard fluid with follow-up in 4-6 weeks
Has cyst come back?
No
Routine screening
Yes
Mammogram and excision

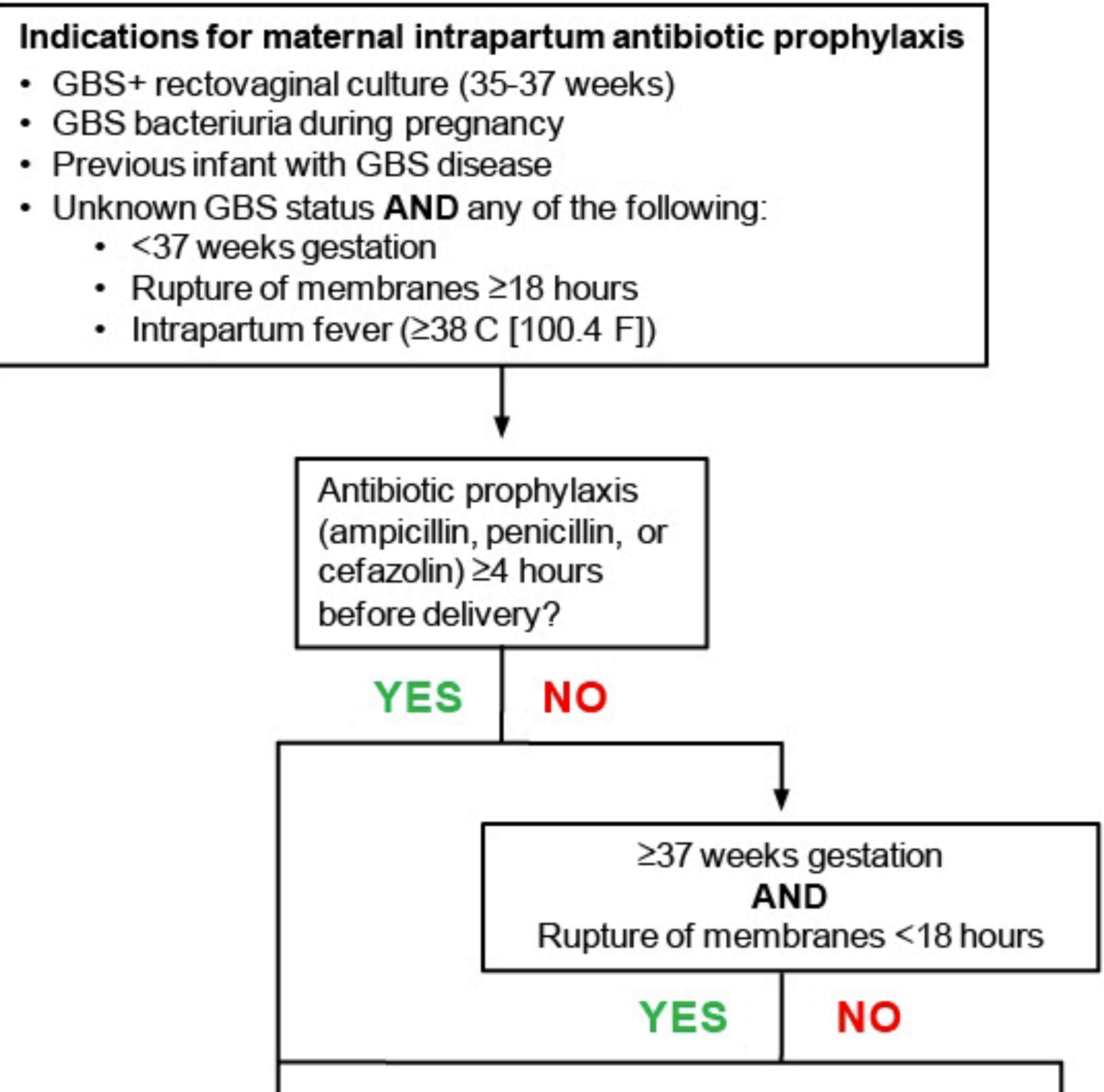
Indications for ICD therapy	
Primary prevention	• Prior MI & LVEF ≤30% • Cardiomyopathy with NYHA class II or III symptoms & LVEF ≤35%
Secondary prevention	• Prior unstable/resuscitated VT or prior VF (unless reversible cause was identified or within 48 hours of MI) • Prior sustained VT with underlying heart disease (ischemic or nonischemic)

LVEF = left ventricular ejection fraction; **MI** = myocardial infarction; **NYHA** = New York Heart Association; **VF** = ventricular fibrillation; **VT** = ventricular tachycardia.

Effect of maneuvers on hypertrophic cardiomyopathy

	Physiologic effect	Change in murmur intensity
Valsalva (straining phase)	↓ Preload	↑
Abrupt standing (from sitting or supine position)		
Nitroglycerin administration		
Sustained hand grip	↑ Afterload	↓
Squatting (from standing position)	↑ Afterload & ↑ preload	
Passive leg raise	↑ Preload	

Prevention of neonatal GBS infection



Indications for maternal intrapartum antibiotic prophylaxis

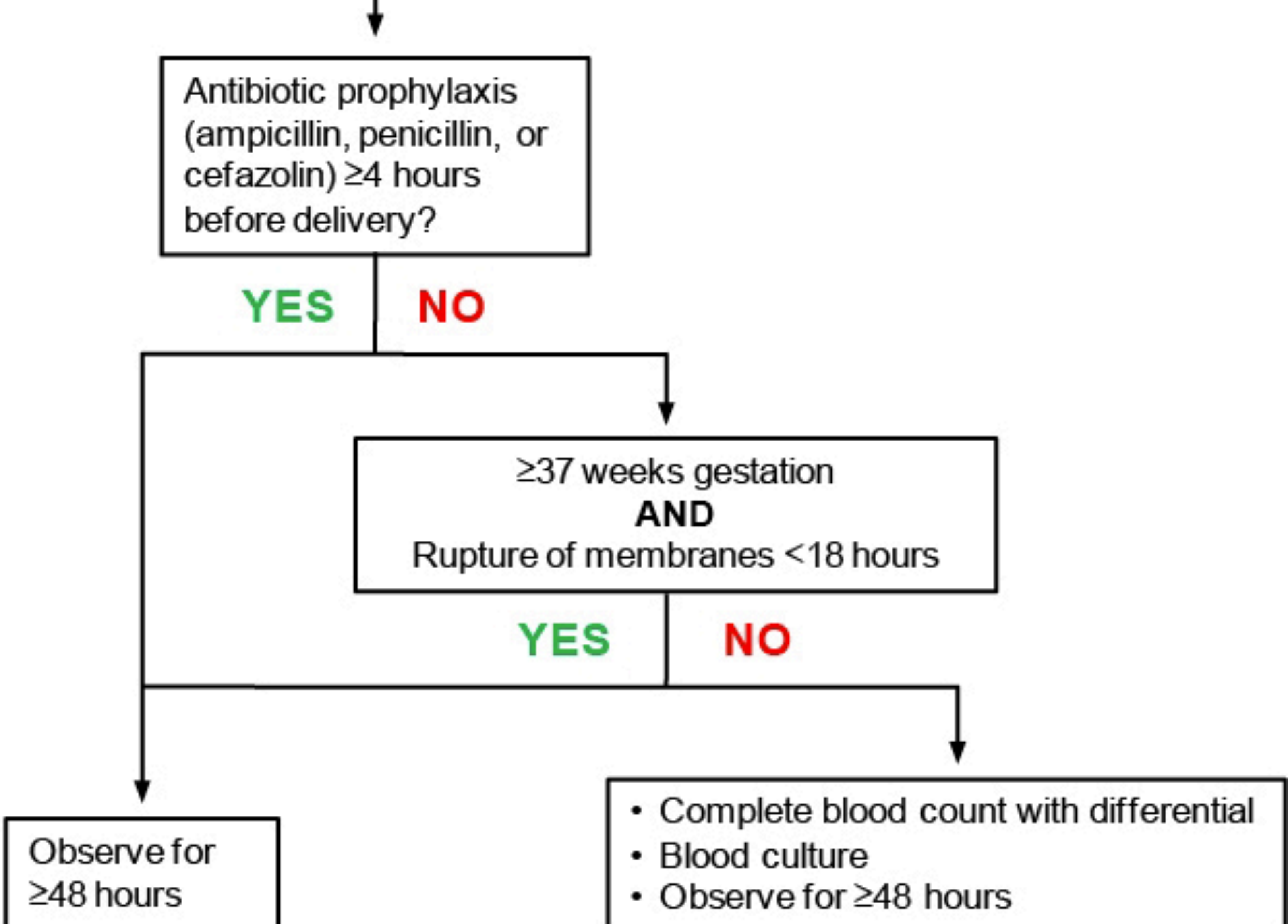
- GBS+ rectovaginal culture (35-37 weeks)
- GBS bacteriuria during pregnancy
- Previous infant with GBS disease
- Unknown GBS status **AND** any of the following:
  - <37 weeks gestation
  - Rupture of membranes ≥18 hours
  - Intrapartum fever (≥38 C [100.4 F])

Antibiotic prophylaxis (ampicillin, penicillin, or cefazolin) ≥4 hours before delivery?

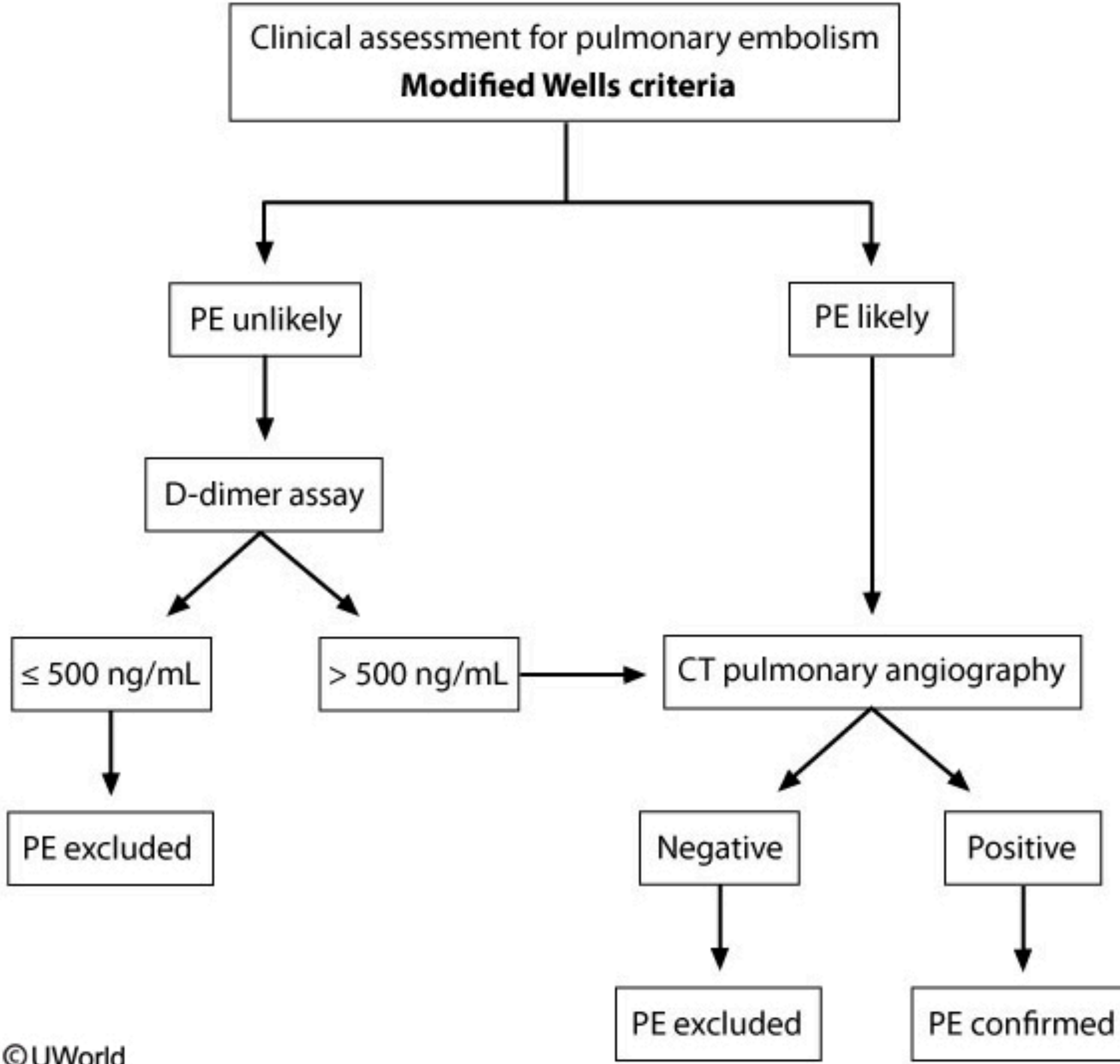
YES NO

≥37 weeks gestation
AND
Rupture of membranes <18 hours

YES NO


Antibiotic prophylaxis (ampicillin, penicillin, or cefazolin) ≥4 hours before delivery?
YES
NO
≥37 weeks gestation
AND
Rupture of membranes <18 hours
YES
NO
Observe for ≥48 hours
• Complete blood count with differential
• Blood culture
• Observe for ≥48 hours

Diagnostic strategy in suspected pulmonary embolism


Clinical assessment for pulmonary embolism
Modified Wells criteria
PE unlikely
PE likely
D-dimer assay
≤ 500 ng/mL
> 500 ng/mL
CT pulmonary angiography
PE excluded
Negative
Positive
PE excluded
PE confirmed

©UWorld

Modified Wells criteria for pretest probability of PE

Score +3 points

- Clinical signs of DVT
- Alternate diagnosis less likely than PE

Score +1.5 points

- Previous PE or DVT
- Heart rate >100
- Recent surgery or immobilization

Score +1 point

- Hemoptysis
- Cancer

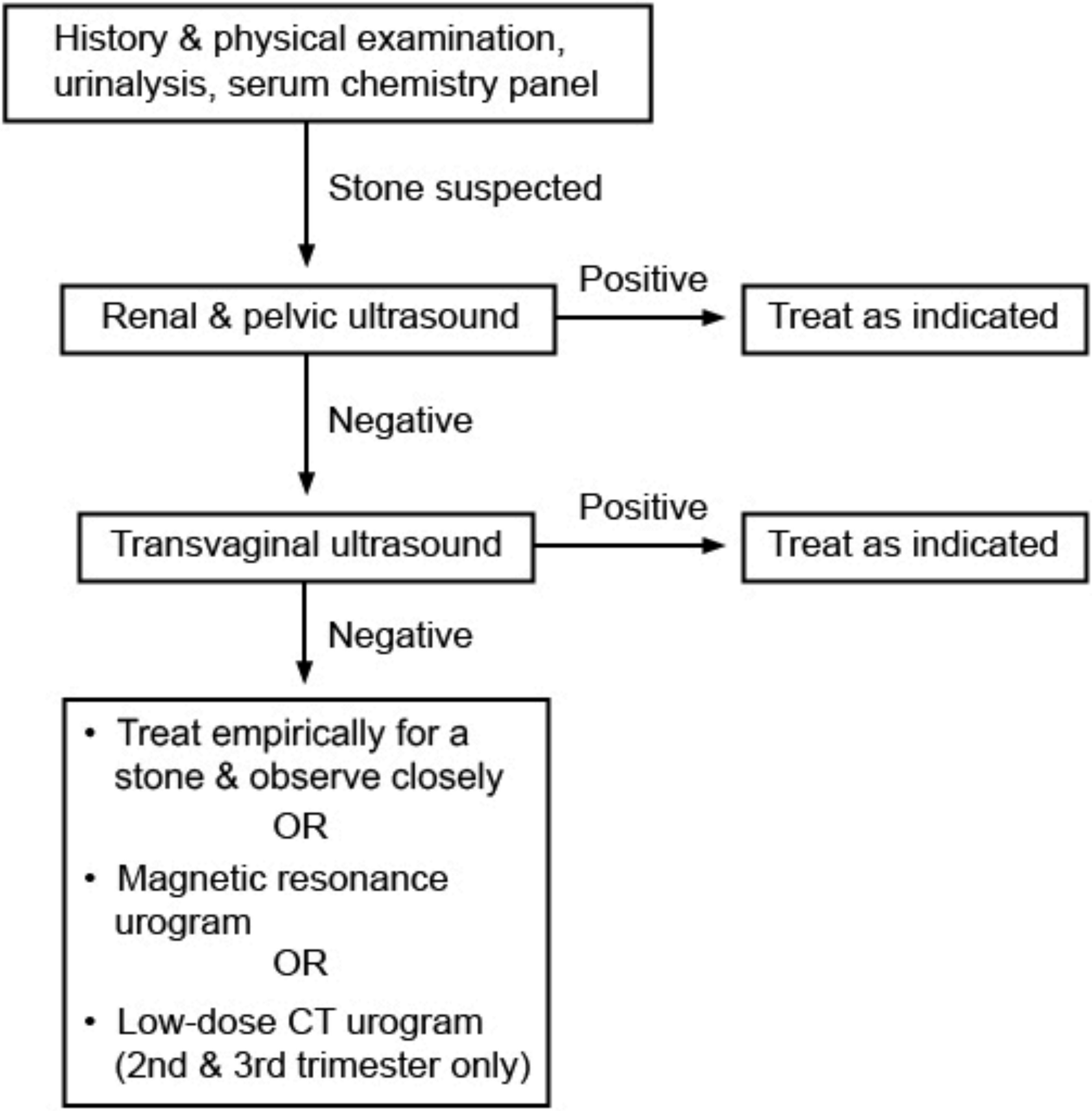
Total score for clinical probability

≤ 4 = PE unlikely

> 4 = PE likely

Management options for pulmonary embolism

Anticoagulation	• All patients unless specific contraindications to anticoagulation
Inferior vena cava filter	• Anticoagulation contraindicated or ineffective • Low cardiopulmonary reserve
Thrombolysis	• PE with hypotension (systolic BP <90 mm Hg) **AND** • Low bleeding risk
Embolectomy (percutaneous or surgical)	• Shock likely to cause death within hours **OR** • Failed thrombolysis (or thrombolysis contraindicated) with persistent hypotension



Evaluation of renal colic during pregnancy

History & physical examination, urinalysis, serum chemistry panel
Stone suspected
Renal & pelvic ultrasound
Positive
Treat as indicated
Negative
Transvaginal ultrasound
Positive
Treat as indicated
Negative
• Treat empirically for a stone & observe closely
OR
• Magnetic resonance urogram
OR
• Low-dose CT urogram (2nd & 3rd trimester only)

High anion gap metabolic acidosis

Anion gap = Sodium – (Chloride + Bicarbonate)
(Normal = 10-14)

Methanol
Uremia
Diabetic ketoacidosis
Propylene glycol/**P**araldehyde
Isoniazid/**I**ron
Lactic acidosis
Ethylene glycol (antifreeze)
Salicylates (aspirin)

Mnemonic: MUDPILES

Medical therapy for benign prostatic hyperplasia

Therapy	Clinical features
Alpha-adrenergic antagonists (eg, terazosin, tamsulosin)	• Relax smooth muscle in bladder neck, prostate capsule & prostatic urethra • Work against dynamic component of bladder outlet obstruction, usually within days to weeks • Usually preferred for symptom improvement • **Side effects**: Orthostatic hypotension, dizziness
5-alpha-reductase inhibitors (eg, finasteride, dutasteride)	• Inhibit conversion of testosterone to dihydrotestosterone in the prostate • Reduce prostate gland size (volume) to improve fixed component of bladder outlet obstruction • Symptom improvement can take up to 6-12 months • **Side effects**: Decreased libido, erectile dysfunction
Antimuscarinics (eg, tolterodine)	• May be useful in men with overactive bladder, urinary frequency, urgency & incontinence • Sometimes combined with one of the therapies listed above • Usually restricted to men with low post-void residual volume

JNC 8 recommendations for treating hypertension

	Initiate Rx	Goal BP
Age ≥60	≥150 mm Hg systolic BP **or** >90 mm Hg diastolic BP	<150/90 mm Hg
Age <60, chronic kidney disease, diabetes	≥140 mm Hg systolic BP **or** >90 mm Hg diastolic BP	<140/90 mm Hg

Initial treatment choice	Black	Thiazide diuretic or CCB, alone or in combination (ACE/ARB not first-line)
	Other ethnicities	Thiazide diuretic, ACEI, ARB, or CCB alone or in combination
	All ethnicities with chronic kidney disease or diabetes	ACEI or ARB, alone or combined with other drug classes

ACEI = angiotensin-converting enzyme inhibitor; ARB = angiotensin receptor blocker; BP = blood pressure; CCB = calcium channel blocker.

The most commonly used calculation to predict mortality in patients with liver disease is the Model for End-Stage Liver Disease (MELD) scoring system. The three values used to calculate the score are bilirubin, INR, and serum creatinine. The formula is: 3.8 [Ln serum bilirubin (mg/dL)] + 11.2 [Ln INR] + 9.6 [Ln serum creatinine (mg/dL)] + 6.4. This scoring system has largely replaced the Child-Turcotte-Pugh scoring system since it relies only on objective variables and is applicable along a broad continuum of disease. The MELD score can be used to determine a patient's 90 day survival. There is a 95% survival rate among patients with a score of less than 15, 65% survival with a score of 30, and only a 10-15% survival rate with a score of 40.

World Health Organization definition of osteoporosis & osteopenia

Normal	T-score* -1 & above
Low bone mass (osteopenia)	T-score -1 to -2.5
Osteoporosis	T-score -2.5 or lower
Severe or established osteoporosis	T-score -2.5 or lower with ≥1 fragility fractures**

* T-score: Number of standard deviations above (+) or below (-) the mean for a healthy 30-year-old of the same gender & ethnicity on BMD testing.

** A fracture that results from trauma ≤ that from a fall from a standing height; indicates compromised bone strength regardless of BMD reading.

FRAX assessment tool

The FRAX risk calculator is an on-line assessment tool developed by the World Health Organization to estimate the 10-year risk of fracture in patients with osteopenia/osteoporosis. It is available at http://www.shef.ac.uk/FRAX/tool.jsp

The following variables are included in estimating fracture risk:

- Age
- Sex
- Weight
- Height
- Previous fracture history
- Smoking status
- Glucocorticoid use
- Rheumatoid arthritis history
- Secondary causes of osteoporosis
- Alcohol use
- Bone mineral density at the femoral neck

Pruritus is a very common complaint during pregnancy. It is reported to affect up to 20% of pregnant women. The symptom may be a manifestation of pregnancy-associated dermatosis, although there is usually no pathologic process present in most cases. Common pruritic locations are the scalp, anus, vulva, and abdomen (during the third trimester). Pregnancy-induced pruritus may be related to dermographism or urticaria, which are common in the last half of pregnancy. Topical steroids, antihistamines, oatmeal baths, emollients, and UVB are used to treat the condition.

(Choice A) Papular urticarial papules and plaques of pregnancy (PUPPP) is a relatively common pregnancy-associated dermatosis that is characterized by pruritic erythematous papules within the striae gravidarum. The lesions may spread to involve the extremities.

(Choice B) Herpes gestationis manifests as urticarial plaques, papules and vesicles surrounding the umbilicus.

(Choice C) Pustular psoriasis presents as erythematous plaques with surrounding pustules.

(Choice D) Pruritus folliculitis is characterized by acne-like lesions.

Herpes gestationis is an autoimmune disease of pregnancy. Autoantibodies are detected in the skin as well as in the circulation. Corticosteroids are the mainstay of therapy. In early and mild cases, topical mid-potency steroids (e.g., triamcinolone) are used. In more advanced cases or if topical steroids are not effective, systemic steroids are employed.

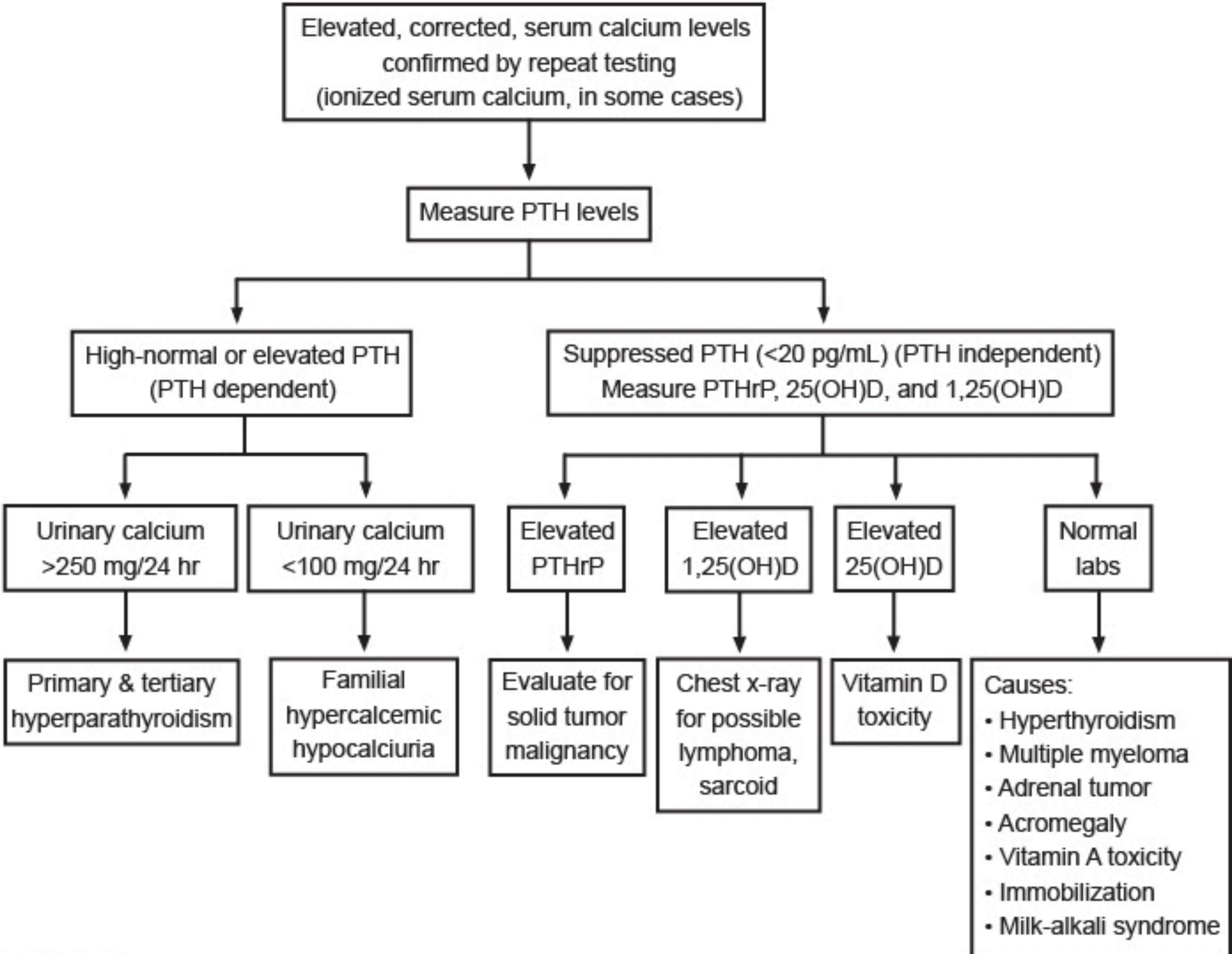
(Choise B) Oral antihistamines can be added to the treatment regimen to alleviate pruritic symptoms.

Note: Topical steroids and antihistamines are widely used to treat many pregnancy-associated dermatoses, including papular urticarial papules and plaques of pregnancy (PUPPP); therefore, these are typically the correct choices for questions asking about the treatment of pregnancy-associated dermatoses!

(Choices C and D) Oatmeal bath and UVB therapy are sometimes effective in alleviating pruritic symptoms of pregnancy-associated, physiologic skin changes.

(Choice E) Oral ursodeoxycholic acid is the most promising treatment of intrahepatic cholestasis of pregnancy, a disease associated with severe generalized pruritus.

Diagnostic approach to hypercalcemia


Elevated, corrected, serum calcium levels confirmed by repeat testing (ionized serum calcium, in some cases)
Measure PTH levels
High-normal or elevated PTH (PTH dependent)
Suppressed PTH (<20 pg/mL) (PTH independent) Measure PTHrP, 25(OH)D, and 1,25(OH)D
Urinary calcium >250 mg/24 hr
Urinary calcium <100 mg/24 hr
Elevated PTHrP
Elevated 1,25(OH)D
Elevated 25(OH)D
Normal labs
Primary & tertiary hyperparathyroidism
Familial hypercalcemic hypocalciuria
Evaluate for solid tumor malignancy
Chest x-ray for possible lymphoma, sarcoid
Vitamin D toxicity
Causes:
• Hyperthyroidism
• Multiple myeloma
• Adrenal tumor
• Acromegaly
• Vitamin A toxicity
• Immobilization
• Milk-alkali syndrome

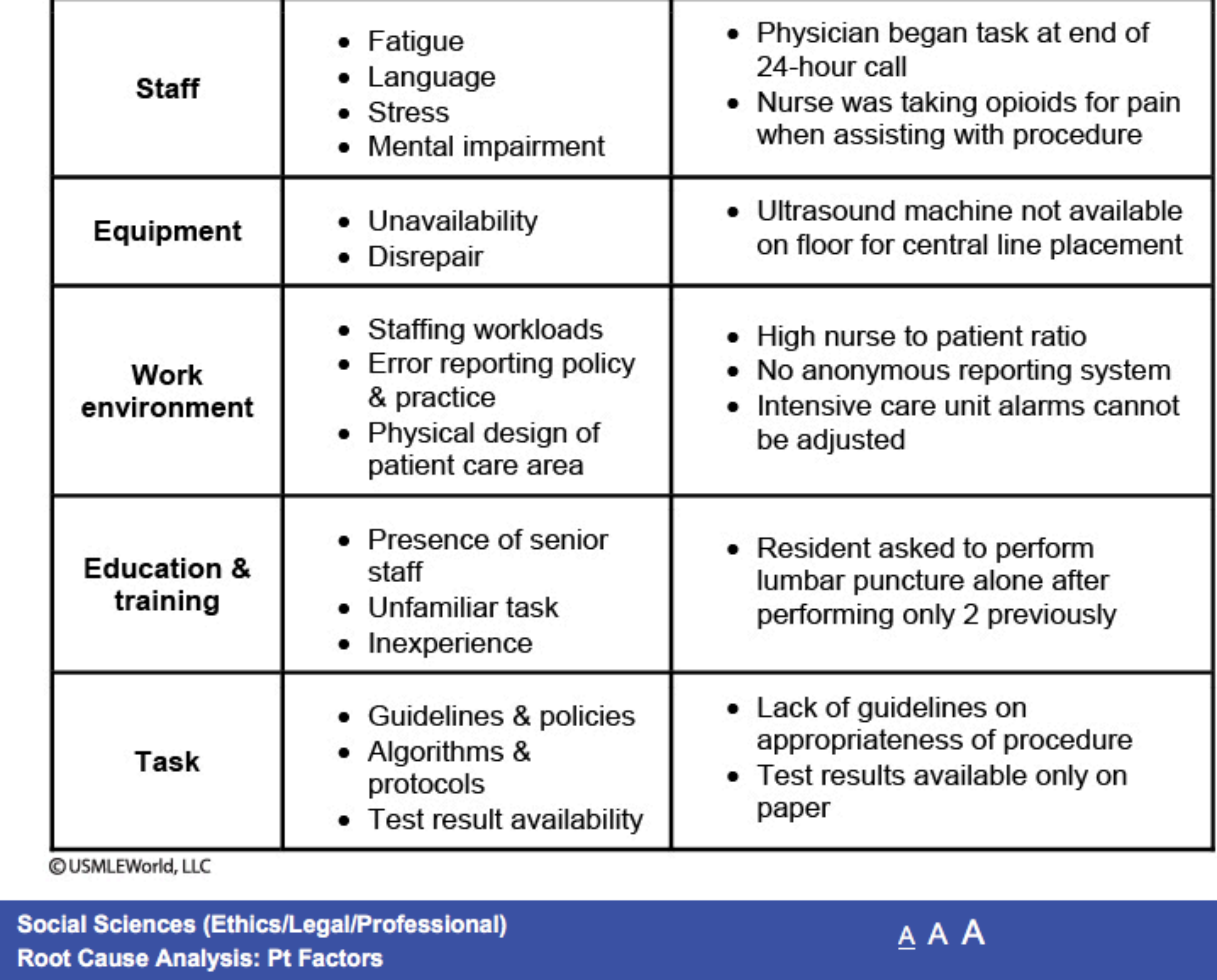
Malignancy-associated hypercalcemia

Cause	Tumor	Mechanism
PTHrP production (**80%** of malignancy-induced hypercalcemia)	• Squamous cell cancers (eg, lung, head, neck, esophagus) • Renal & bladder cancer • Ovarian & endometrial cancer • Breast cancer	Activation of PTH receptor, excessive bone resorption
1,25(OH)2 vitamin D production	• Lymphomas (all types)	Excessive gut absorption of calcium
Bone metastasis	• Breast cancer • Multiple myeloma • Lymphomas	Release of local factors (eg, cytokines) to stimulate bone resorption
Ectopic PTH production (very rare)	• Variable	Bone resorption

PTH = parathyroid hormone; **PTHrP** = parathyroid hormone-related protein.

Contributing factors for medical errors

Category	Factors	Examples
Patient	• Clinical condition • Language • Cultural or religious beliefs • Social support	• Patient & care provider do not speak the same language • Opposition to blood products
Staff	• Fatigue • Language • Stress • Mental impairment	• Physician began task at end of 24-hour call • Nurse was taking opioids for pain when assisting with procedure
Equipment	• Unavailability • Disrepair	• Ultrasound machine not available on floor for central line placement
Work environment	• Staffing workloads • Error reporting policy & practice • Physical design of patient care area	• High nurse to patient ratio • No anonymous reporting system • Intensive care unit alarms cannot be adjusted



Staff	• Fatigue • Language • Stress • Mental impairment	• Physician began task at end of 24-hour call • Nurse was taking opioids for pain when assisting with procedure
Equipment	• Unavailability • Disrepair	• Ultrasound machine not available on floor for central line placement
Work environment	• Staffing workloads • Error reporting policy & practice • Physical design of patient care area	• High nurse to patient ratio • No anonymous reporting system • Intensive care unit alarms cannot be adjusted
Education & training	• Presence of senior staff • Unfamiliar task • Inexperience	• Resident asked to perform lumbar puncture alone after performing only 2 previously
Task	• Guidelines & policies • Algorithms & protocols • Test result availability	• Lack of guidelines on appropriateness of procedure • Test results available only on paper

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Social Sciences (Ethics/Legal/Professional)
Root Cause Analysis: Pt Factors

Central line-associated bloodstream infection (CLABSI) can prolong hospital stays and increase morbidity and mortality. CLABSI is commonly caused by coagulase-negative staphylococci, *Staphylococcus aureus*, *Candida* spp, and aerobic Gram-negative bacilli. Risk factors for infection include location (lower > upper extremity, wrist > arm, femoral > internal jugular), duration > 1 week, and site care (eg, daily chlorhexidine bathing reduces risk in intensive care unit patients).

A comprehensive approach to CLABSI prevention includes the following:

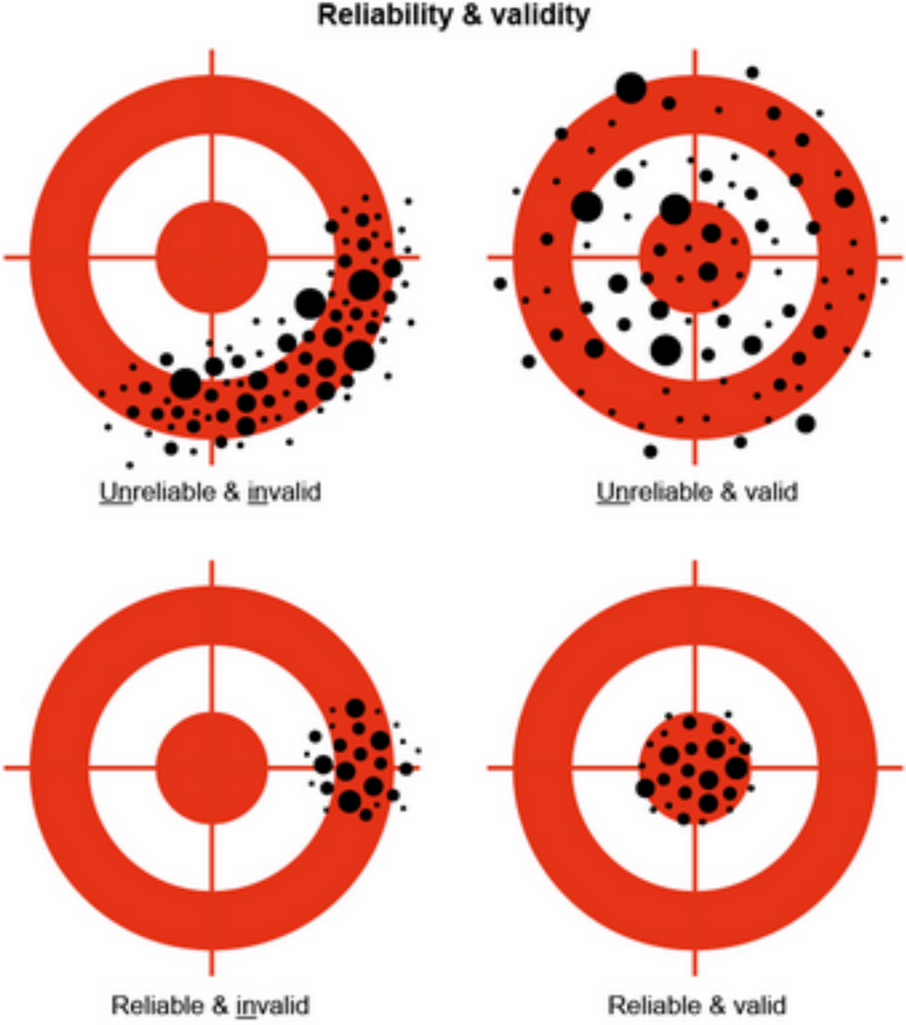
- Checklist prior to catheter insertion
- Proper hand hygiene prior to handling catheter
- Avoiding femoral vein for central venous access
- Using all-inclusive catheter kit
- Using maximal sterile barrier precautions (eg, mask, sterile gown, drape, and gloves)
- Using chlorhexidine-based antiseptic for skin preparation
- Ensuring proper catheter site care with catheter removal when no longer needed

The most effective prevention is full-body drape during catheter insertion to avoid contamination as skin organisms most commonly cause CLABSI.

Suicide risk & protective factors	
Risk factors	• Preexisting psychiatric disorders • Hopelessness, impulsivity • Previous suicide attempts or threats • Divorced or separated • Elderly white men • Unemployed or unskilled • Physical illness • Family history of suicide • Family discord • Access to firearms • Substance abuse
Protective factors	• Social support/family connectedness • Pregnancy • Parenthood • Religion & participation in religious activities

Clinical features of compartment syndrome	
Common	• Pain out of proportion to injury • **Pain ↑ on passive stretch** • Rapidly increasing & tense swelling • **Paresthesia (early)**
Uncommon	• ↓ sensation • Motor weakness (within hours) • Paralysis (late) • ↓ distal pulses (uncommon)

Colon cancer screening guidelines		
Patients at average risk	• General population • Single first degree relative age ≥60 with colon cancer or adenomatous polyps	Start screening at age 50 with 1 of the following: • Colonoscopy every 10 years • Annual high sensitivity fecal occult blood testing (FOBT) **or** fecal immunochemical test (FIT) • Flexible sigmoidoscopy every 5 years (with FOBT every 3 years)
Patients at increased risk	• First degree relative age <60 with colon cancer or adenomatous polyps • 2 first degree relatives with colon cancer or adenomatous polyps at any age	• Colonoscopy at age 40 **or** 10 years before the age of cancer diagnosis in a relative (whichever comes first) • Repeat every 3–5 years


Reliability & validity
Unreliable & invalid
Unreliable & valid
Reliable & invalid
Reliable & valid

When the 2 radiologists review the CT images, their interpretations of the findings may agree or disagree due to chance alone. The **kappa statistic** is a quantitative measure of **inter-rater reliability** (sometimes referred to as inter-rater concordance). It reflects the extent to which inter-rater agreement represents an improvement on chance agreement alone. Kappa values range from -1 (perfect disagreement) to +1 (perfect agreement), with kappa = 0 suggesting agreement due to chance, kappa <0 suggesting less than chance agreement (possibly intentional disagreement), and kappa >0 suggesting greater than chance agreement. The following (arbitrary) cutoffs are often used for kappa: 0-0.20 represents negligible improvement over chance agreement, 0.21-0.40 is minimal, 0.41-0.60 is fair, 0.61-0.80 is good, and >0.80 is excellent.

Definitive diagnosis of sarcoidosis can be made from the biopsy of the easily accessible lesions, including:

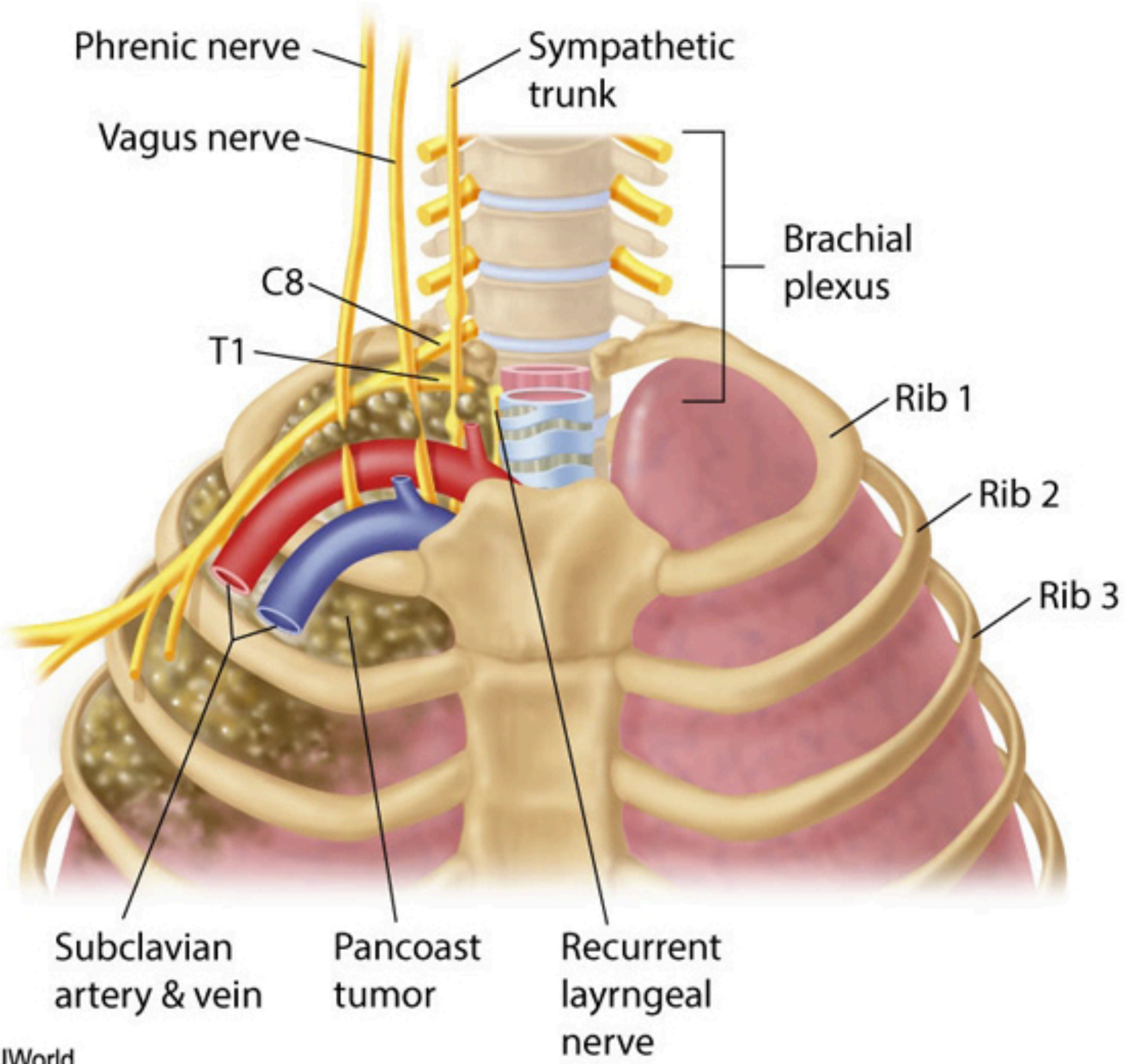
1. any palpable lymph node
2. subcutaneous nodule except erythema nodosum
3. enlarged parotid
4. lacrimal gland

If there is no easily accessible lesion, fiberoptic bronchoscopy with transbronchial lung biopsy is the procedure of choice. Nerve and liver biopsies are not recommended unless all other approaches fail.

Clinical presentation of Pancoast tumors

- Shoulder pain (most common)
- Horner's syndrome (ipsilateral ptosis, miosis, enophthalmos, and anhidrosis) from involvement of paravertebral sympathetic chain and inferior cervical ganglion
- C8-T2 neurological involvement
    - Weakness and/or atrophy of intrinsic hand muscles
    - Pain and paresthesias of 4th and 5th digits, medial arm, and forearm
- Supraclavicular lymph node enlargement
- Weight loss

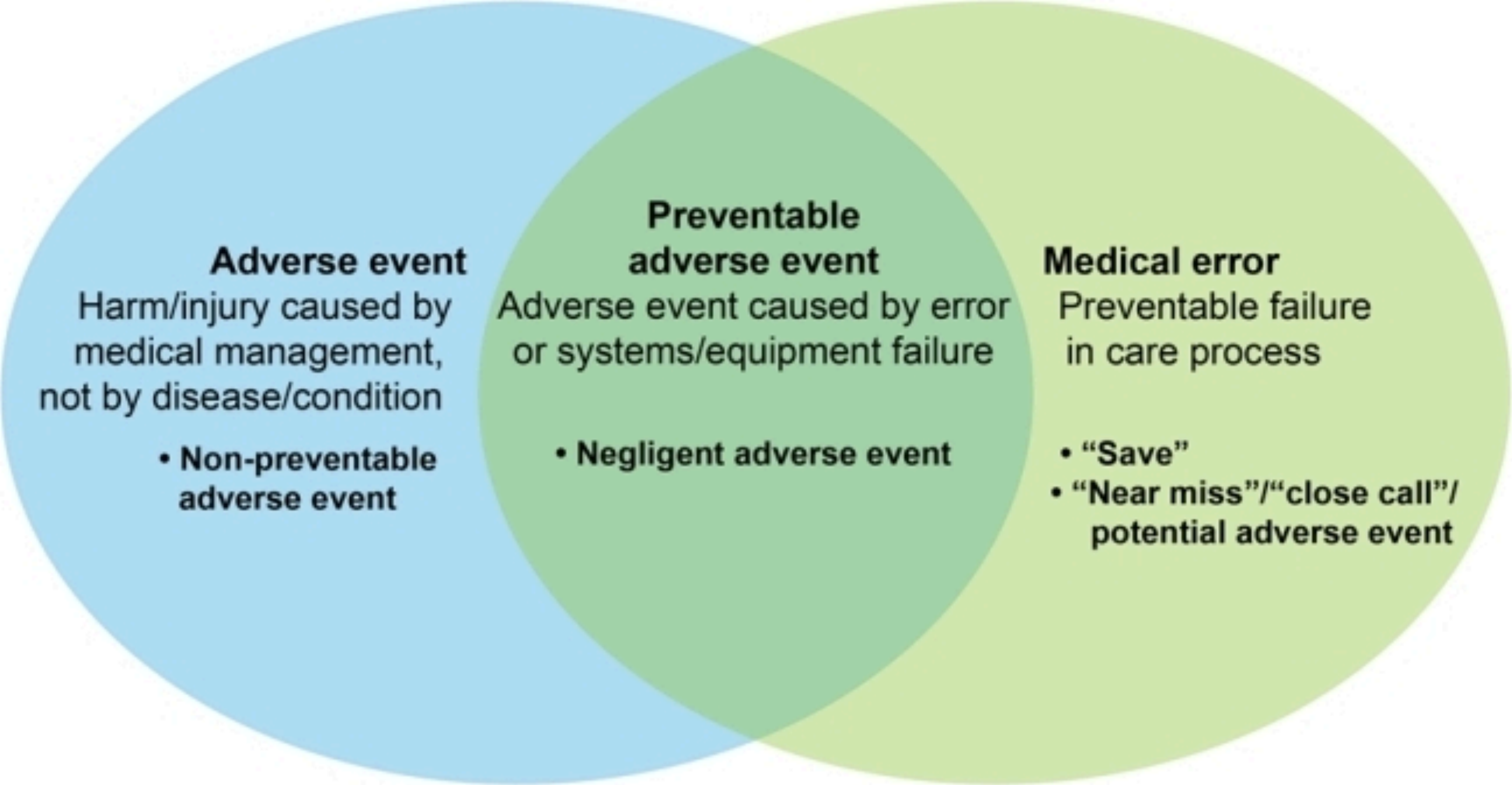
Pancoast tumor


Phrenic nerve
Sympathetic trunk
Vagus nerve
Brachial plexus
C8
T1
Rib 1
Rib 2
Rib 3
Subclavian artery & vein
Pancoast tumor
Recurrent layrngeal nerve
©UWorld

Parameter	**Iron deficiency anemia**	**α-thalassemia minor**	**β-thalassemia minor**
MCV	↓	↓	↓
RDW	↑	Normal	Normal
RBCs	↓	Normal	Normal
Peripheral smear	Microcytosis, hypochromia	Target cells	Target cells
Serum iron studies	↓ Iron & ferritin ↑ TIBC	Normal/ ↑ iron & ferritin (RBC turnover)	Normal/ ↑ iron & ferritin (RBC turnover)
Response to iron supplementation	↑ Hemoglobin	No improvement	No improvement
Hemoglobin electrophoresis	Normal	Normal	↑ Hemoglobin A2

MCV = mean corpuscular volume; **RBC** = red blood cell; **RDW** = red cell distribution width;
TIBC = total iron-binding capacity.

Adverse events & medical errors



Adverse event
Harm/injury caused by
medical management,
not by disease/condition

- **Non-preventable adverse event**

Preventable adverse event
Adverse event caused by error
or systems/equipment failure

- **Negligent adverse event**

Medical error
Preventable failure
in care process

- **“Save”**
- **“Near miss”/“close call”/ potential adverse event**

Benefits of breastfeeding	
Maternal	• Stimulates postpartum uterine involution & bleeding cessation • Faster return to prepartum weight • Natural contraceptive (promotes child spacing) • Maternal-infant bonding • Reduced risk of breast & ovarian cancers

Infant	• Improved gastrointestinal function
	• Infection prevention:
	    • Otitis media
	    • Gastroenteritis
	    • Respiratory illnesses
	    • Urinary tract infections
	• Decreased risk of childhood cancer, type I diabetes mellitus, necrotizing enterocolitis & allergies

Criteria for diagnosis of giant cell arteritis

- Age ≥50 (greatest risk factor)
- New onset localized headache with fever and visual disturbances
- ESR >50
- Tenderness or decreased pulse of the temporal artery
- Temporal artery biopsy showing necrotizing arteritis with mainly mononuclear cells

* **Presence of 3 out of 5 above criteria is 94% sensitive and 91% specific for giant cell arteritis**

Anticoagulation during pregnancy

Anticoagulant	Route	Optimal timing	Maternal considerations	Fetal effects
Low-molecular weight heparin	Subcutaneous	Throughout pregnancy	• Easier to administer & achieve therapeutic levels than unfractionated heparin	None
Unfractionated heparin	Subcutaneous or intravenous	Before delivery	• Fast-acting & fastest reversal	
Warfarin	Oral	Preconception & postpartum	• Most effective • Best compliance due to route • Benefits outweigh risks during 2nd & 3rd trimesters for high-risk patients	• Teratogenic to bone & cartilage • Fetal bleeding

Common causes of shoulder pain

Rotator cuff impingement or tendinopathy	• Pain with **abduction, external rotation** • Subacromial tenderness • Normal range of motion with positive **impingement tests** (eg, Neer, Hawkins)
Rotator cuff tear	• Similar to rotator cuff tendinopathy • Weakness with external rotation • Age >40
Adhesive capsulitis (frozen shoulder)	• Decreased **passive & active** range of motion • More stiffness than pain
Biceps tendinopathy/rupture	• **Anterior** shoulder pain • Pain with lifting, carrying, or overhead reaching • Weakness less common
Glenohumeral osteoarthritis	• Uncommon & usually caused by **trauma** • Gradual onset of anterior or deep shoulder pain • Decreased active & passive abduction & external rotation

Euthyroid sick syndrome

	Early/mild	Prolonged/severe
T3	↓	↓
T4	Normal	↓
TSH	Normal	↓
Reverse T3	↑	↑

T3 = triiodothyronine; T4 = thyroxine; TSH = thyroid-stimulating hormone.

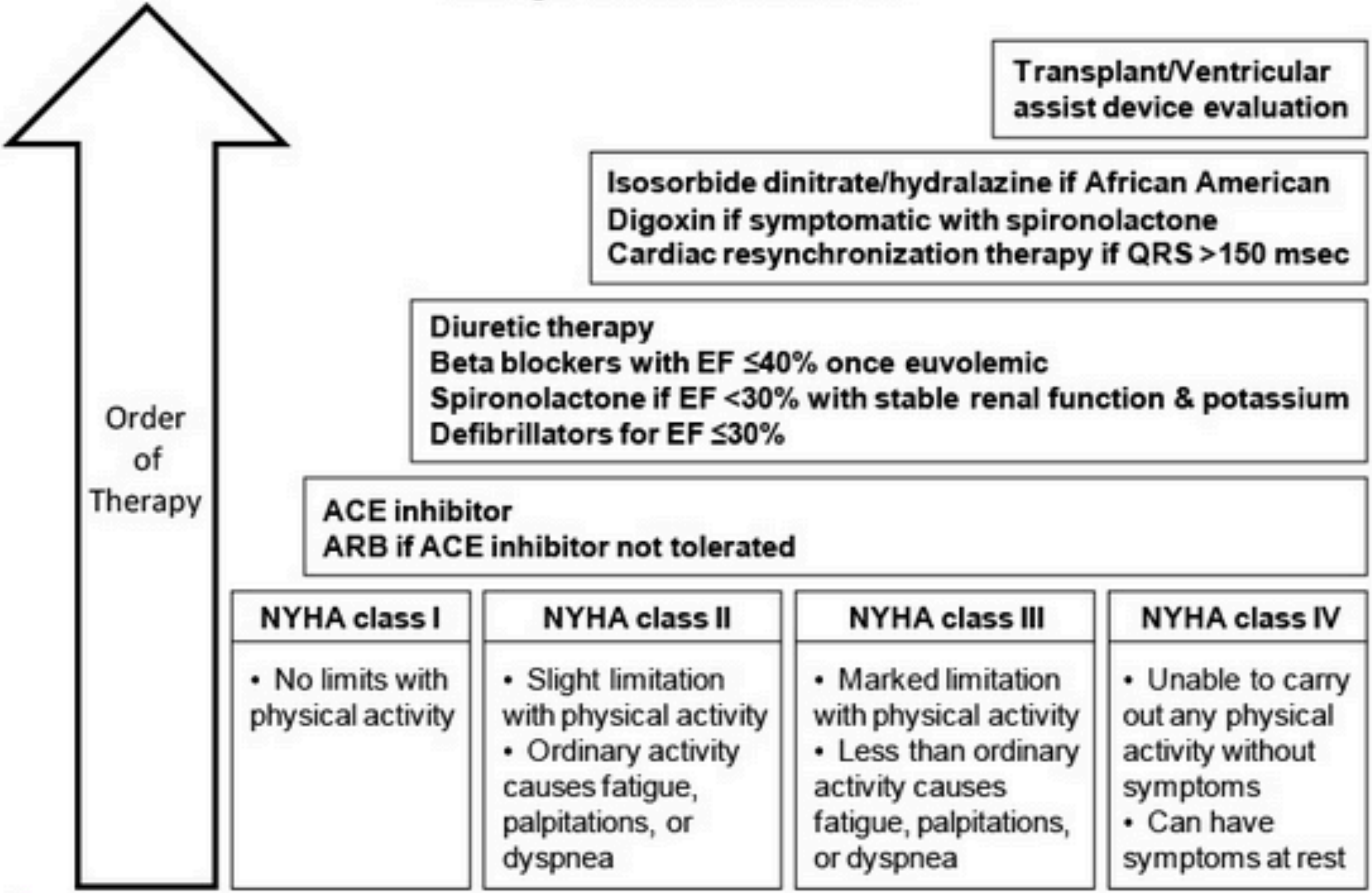
Breastfeeding failure jaundice vs breast milk jaundice

Diagnosis	Timing	Pathophysiology	Clinical features
Breastfeeding failure jaundice	First week of life	Lactation failure resulting in: • Decreased bilirubin elimination • Increased enterohepatic circulation	• Suboptimal breastfeeding • Signs of dehydration
Breast milk jaundice	Starts at age 3-5 days; peaks at 2 weeks	High levels of β-glucuronidase in breast milk deconjugate intestinal bilirubin & increase enterohepatic circulation	• Adequate breastfeeding • Normal examination

Surgical management is the only chance of cure for patients with renal cell carcinoma. If the renal mass is confined within the renal capsule (stage I), partial nephrectomy can be offered. If the process extends through the renal capsule but not beyond Gerota's fascia (stage II), radical nephrectomy is the best treatment option.

High yield question

Management of heart failure



Transplant/Ventricular assist device evaluation

Isosorbide dinitrate/hydralazine if African American
Digoxin if symptomatic with spironolactone
Cardiac resynchronization therapy if QRS >150 msec

Diuretic therapy
Beta blockers with EF ≤40% once euvolemic
Spironolactone if EF <30% with stable renal function & potassium
Defibrillators for EF ≤30%

ACE inhibitor
ARB if ACE inhibitor not tolerated

NYHA class I	NYHA class II	NYHA class III	NYHA class IV
• No limits with physical activity	• Slight limitation with physical activity • Ordinary activity causes fatigue, palpitations, or dyspnea	• Marked limitation with physical activity • Less than ordinary activity causes fatigue, palpitations, or dyspnea	• Unable to carry out any physical activity without symptoms • Can have symptoms at rest

Current guidelines recommend biventricular pacing devices for patients in sinus rhythm with severe LV systolic dysfunction with **ejection fraction <35%; NYHA class II, III, or IV heart failure symptoms; and left bundle branch block with QRS duration >150 msec**. There is a weaker recommendation in patients with QRS duration of 120–149 msec.

Management of ST-segment elevation myocardial infarction (STEMI)

- Oxygen for arterial saturation <90%
- Nitrates
  - Caution with hypotension, right ventricular infarction, or severe aortic stenosis
- Antiplatelet therapy
  - Aspirin + $P2Y_{12}$ receptor blocker
- Anticoagulation
  - Unfractionated heparin, low-molecular weight heparin, or bivalirudin
- Beta blockers
  - Contraindicated in overt heart failure
  - High risk for cardiogenic shock
  - Bradycardia
- Prompt reperfusion with PCI
  - Ideal first medical contact to PCI ≤90 minutes
- Statin therapy as soon as possible

PCI = percutaneous coronary intervention.

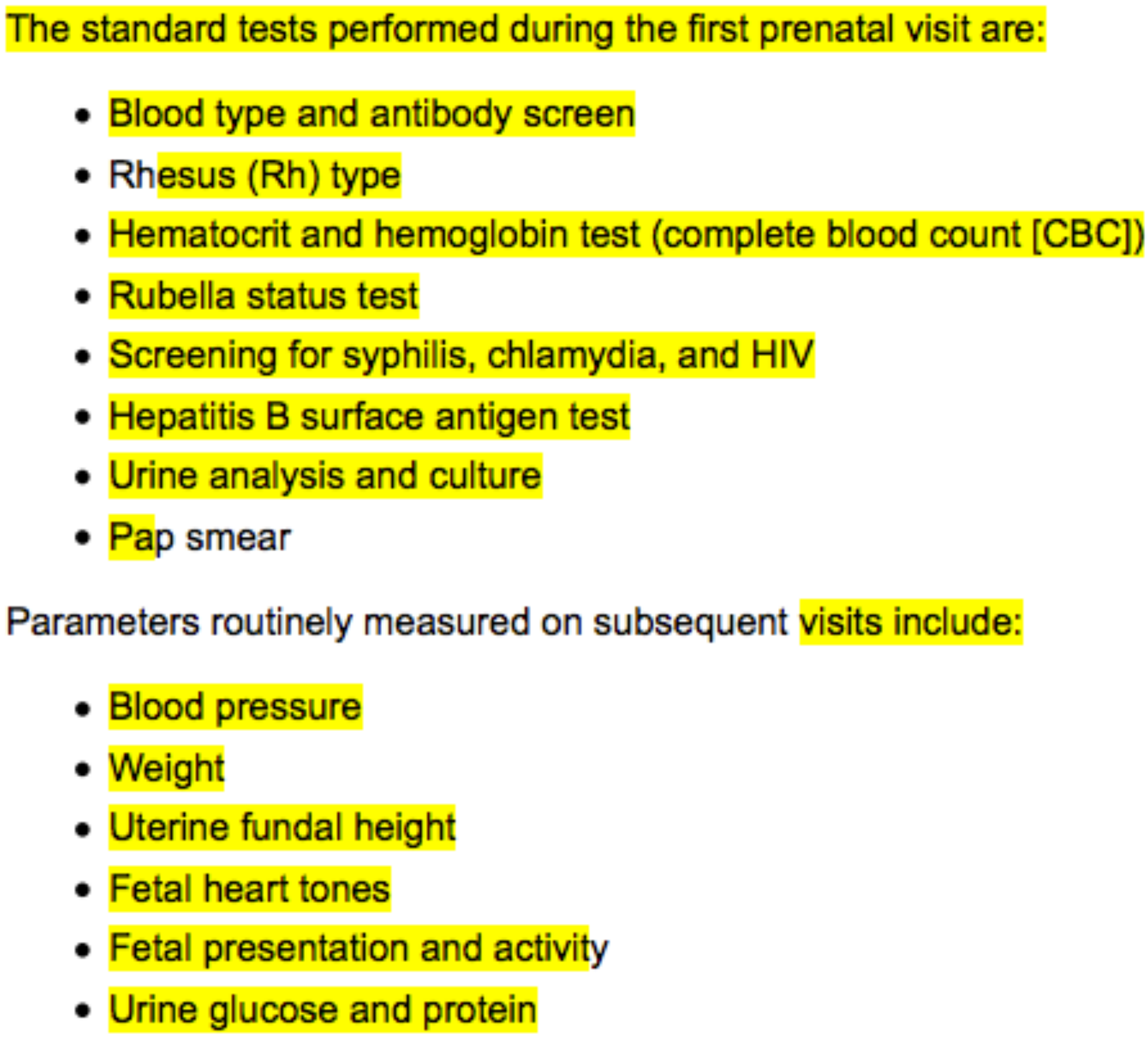
Clinical features of acute bronchitis

Etiology	• Preceding respiratory illness (90% viral)
Clinical presentation	• Cough ◦ >5 days to 3 weeks ◦ Can be productive (yellow, green, or purulent sputum) • Absent systemic findings (eg, fever, chills) • Wheezing or rhonchi, chest wall tenderness
Diagnosis & treatment	• Diagnosis is clinical ◦ Chest x-ray only in patients with suspected pneumonia • Symptomatic treatment ◦ NSAIDs/acetaminophen &/or bronchodilators • Antibiotics **not** recommended

NSAIDS = nonsteroidal anti-inflammatory drugs.

Clinical features of hypothyroidism

Generalized slowing of metabolic processes	• Weakness & fatigue • Weight gain • Bradycardia • Delayed deep-tendon reflexes • Constipation • Cognitive slowing • Cold intolerance
Matrix glycosaminoglycan accumulation	• Coarse dry skin • Hoarseness • Nonpitting edema (myxedema) • Macroglossia
Other mechanisms	• Depression • Myalgia & arthralgia • Hypercholesterolemia



The standard tests performed during the first prenatal visit are:

- Blood type and antibody screen
- Rhesus (Rh) type
- Hematocrit and hemoglobin test (complete blood count [CBC])
- Rubella status test
- Screening for syphilis, chlamydia, and HIV
- Hepatitis B surface antigen test
- Urine analysis and culture
- Pap smear

Parameters routinely measured on subsequent visits include:

- Blood pressure
- Weight
- Uterine fundal height
- Fetal heart tones
- Fetal presentation and activity
- Urine glucose and protein

Traumatic amputation of a body part requires rapid transport of the appendage and reduction of warm ischemia time by cooling the amputated part to a goal temperature of 1-10 C (33.8-50 F). However, the body part should not be cooled below this range to avoid inducing frostbite.

The first symptom of tick paralysis is usually an unsteady gait that progresses to ascending paralysis. The typical presentation is a progressive ascending paralysis that occurs over a matter of hours to days. Fever is typically not present in tick-borne paralysis. Pupillary abnormalities are uncommon in tick paralysis.

In most cases of tick paralysis, removal of the tick(s) will cause a substantial improvement of the paresis within several hours.

Levothyroxine treatment for differentiated epithelial (papillary & follicular) thyroid cancer	
Small, low-risk tumors	• Target TSH 0.1-0.5 µU/mL for 6-12 months, then low normal range
Intermediate risk tumors	• Target TSH 0.1-0.5 µU/mL
Large, aggressive tumors	• Target TSH <0.1 µU/mL; continue for several years

Indications for carotid endarterectomy	
Men	**Asymptomatic:** • 60-99% stenosis **Symptomatic:** • 50-69% stenosis (Grade IIA) • 70-99% stenosis (Grade IA)
Women	**Both symptomatic & asymptomatic:** • 70-99% stenosis

Major adverse effects of antidepressants	
Selective serotonin reuptake inhibitors (eg, citalopram, fluoxetine, paroxetine, sertraline)	• Fatigue, somnolence/insomnia • Weight gain/loss • Sexual dysfunction (especially women) • Serotonin syndrome
Serotonin-norepinephrine reuptake inhibitors (eg, duloxetine, venlafaxine)	• Headache, somnolence/insomnia • Sexual dysfunction
Serotonin modulators (eg, nefazodone, trazodone)	• Sedation (trazodone) • Diarrhea • Hepatotoxicity (nefazodone)
Tricyclic antidepressants (eg, amitriptyline)	• Sedation, dry mouth, constipation • Weight gain, urinary retention
Bupropion	• Insomnia, anxiety/agitation, seizures

Serotonin-norepinephrine reuptake inhibitors (eg, duloxetine, venlafaxine)	• Headache, somnolence/insomnia • Sexual dysfunction
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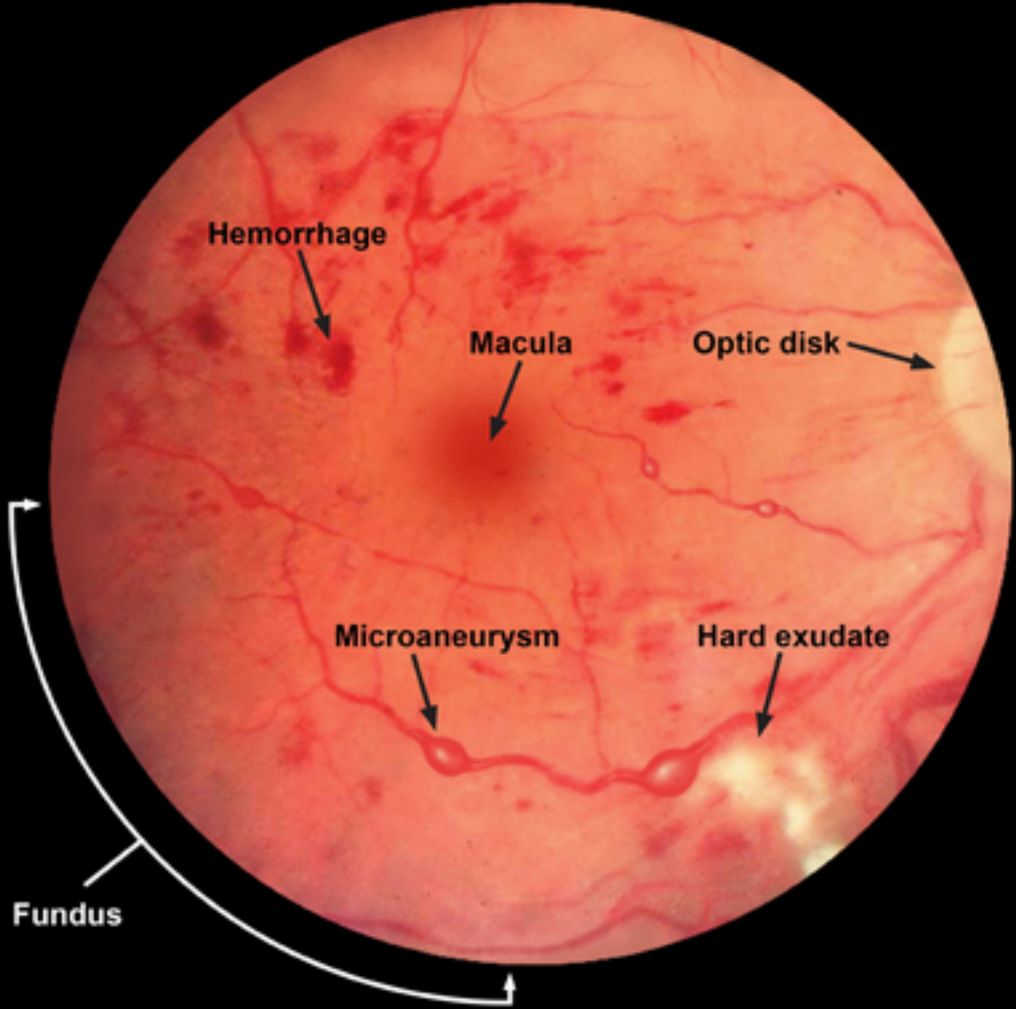
Tricyclic antidepressants (eg, amitriptyline)	• Sedation, dry mouth, constipation • Weight gain, urinary retention
Bupropion	• Insomnia, anxiety/agitation, seizures • Weight loss
Mirtazapine	• Weight gain, drowsiness • Hyperlipidemia

Monosymptomatic (isolated) enuresis	
Definition	Urinary incontinence in children age ≥5
Workup	• Urinalysis • Urologic imaging for children with significant daytime symptoms & history of recurrent UTI
Management	• Behavior modifications ◦ Avoid sugary/caffeinated beverages ◦ Void regularly during the day & immediately before bedtime ◦ Drink ample fluids in the morning & early afternoon; minimize fluid intake before bedtime ◦ Reward system (eg, "gold star" chart) • **Enuresis alarm**: 1st-line intervention when behavior modifications fail; best long-term outcome • Pharmacotherapy: Best for short-term improvement; high risk of relapse ◦ 1st-line: **Desmopressin** ◦ 2nd-line: Tricyclic antidepressants

Causes of secondary enuresis

Etiology	Associated symptoms
Psychological stress	• Behavior regression, mood lability
Urinary tract infection	• Dysuria, hesitancy, urgency, abdominal pain
Diabetes mellitus	• Polyuria, polydipsia, polyphagia, weight loss, lethargy, candidiasis
Diabetes insipidus	• Polyuria, polydipsia
Obstructive sleep apnea	• Snoring, dry mouth, fatigue, hyperactivity, irritability

The optimal blood glucose level in the peripartum period is 72-126 mg/dL. Higher glucose levels can cause fetal hypoglycemia following delivery.


Hemorrhage
Macula
Optic disk
Fundus
Microaneurysm
Hard exudate

Hypocalcemia following parathyroidectomy is caused by relative hypoparathyroidism or hungry bone syndrome. The signs of hypocalcemia are typically bilateral. Unilateral signs may suggest an alternative diagnosis. Hungry bone syndrome usually develops 2 to 4 days following surgery.

*Extremely important question for USMLE step-3

Cerebrospinal fluid analysis

Diagnosis	WBC count (cells/µL)	Glucose (mg/dL)	Protein (mg/dL)
Normal	0–5	40–70	<40
Bacterial meningitis	>1000	<40	>250
Tuberculosis meningitis	5–1000	<10	>250
Viral meningitis	100–1000	40–70	<100
Guillain-Barré	0–5	40–70	45–1000

Alcohol use (abuse) screening

Single-item screening

- How many times in the past year have you had 5 (4 for women) or more drinks in a day?

AUDIT-C

- How often do you drink alcohol?
- How many drinks do you have on a typical day when you are drinking?
- How often do you have 6 (4 for women) or more drinks on 1 occasion?

AUDIT

- 10-item screen assessing frequency, number of drinks & psychosocial consequences

CAGE: Can be used to follow up a positive single-item screening to identify more severe problems

- Have you felt you should **Cut down** on your drinking?
- Have others **Annoyed** you by criticizing your drinking?
- Have you ever felt bad or **Guilty** about your drinking?
- Have you ever taken a drink first thing in the morning (**Eye-opener**) to steady your nerves?

A number of nerve injuries can occur during carotid endarterectomy. Inadvertent retraction or transection of the hypoglossal nerve causes tongue deviation to the site of injury.

*Extremely important question for USMLE step-3

Disorder	**Calcium**	**Phosphorus**	**PTH**	**25 OHD**
PHP	Low	High	High	Normal
HP	Low	High	Low	Normal
VDD	Low	Low	High	Low

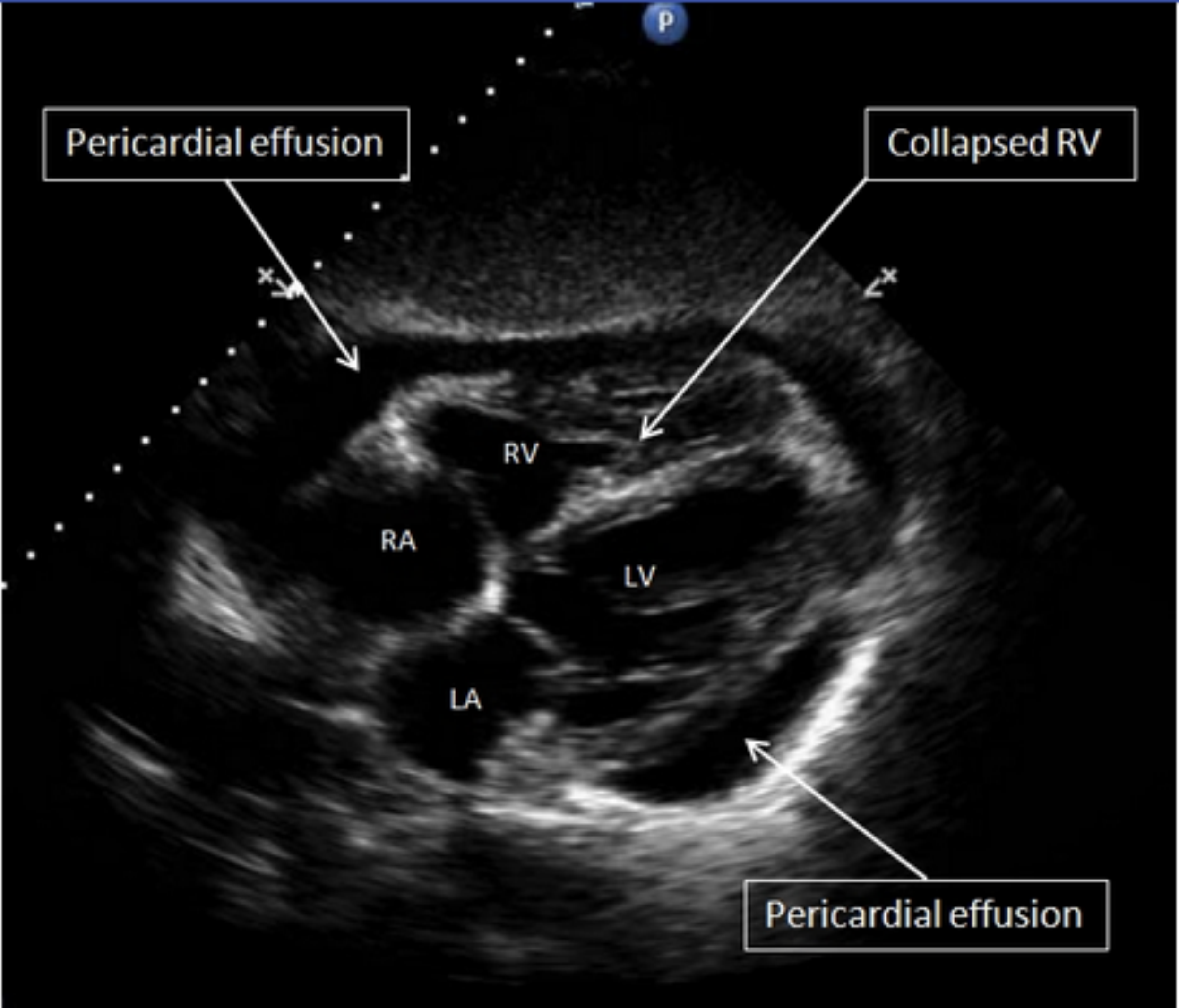
PHP: pseudohypoparathyroidism; HP: hypoparathyroidism; VDD: vitamin D deficiency

25 hydroxy vitamin D levels could be low if there is concomitant vitamin D deficiency, a common problem in subjects living in temperate regions.

Clinical features of cardiac tamponade	
Etiology	• Malignancy/radiation therapy • Infection (eg, viral, tuberculosis, HIV) • Drugs (eg, hydralazine, isoniazid) • Connective tissue diseases (eg, systemic lupus erythematous, rheumatoid arthritis) • Cardiovascular surgery (postoperative pericarditis) • Uremia • Idiopathic
Clinical signs	• Beck’s triad: jugular venous distension, hypotension, diminished heart sounds • Pulsus paradoxus (abnormally large inspiratory decrease in systolic blood pressure >10 mm Hg)
Diagnosis	• **ECG**: Low-voltage QRS complexes, electrical alternans • **Chest x-ray**: Enlarged cardiac silhouette, water-bottle shaped heart, clear lung fields • **Echocardiogram**: Right atrial and right ventricular collapse during diastole, IVC plethora

Several echocardiographic features are useful to diagnose early cardiac tamponade including:

- Right atrial and right ventricular collapse during diastole
- Exaggerated respiratory variation of cardiac and venous flows
- Inferior vena cava (IVC) plethora (dilation and <50% decrease in IVC size during inspiration)


P
Pericardial effusion
Collapsed RV
RV
RA
LV
LA
Pericardial effusion

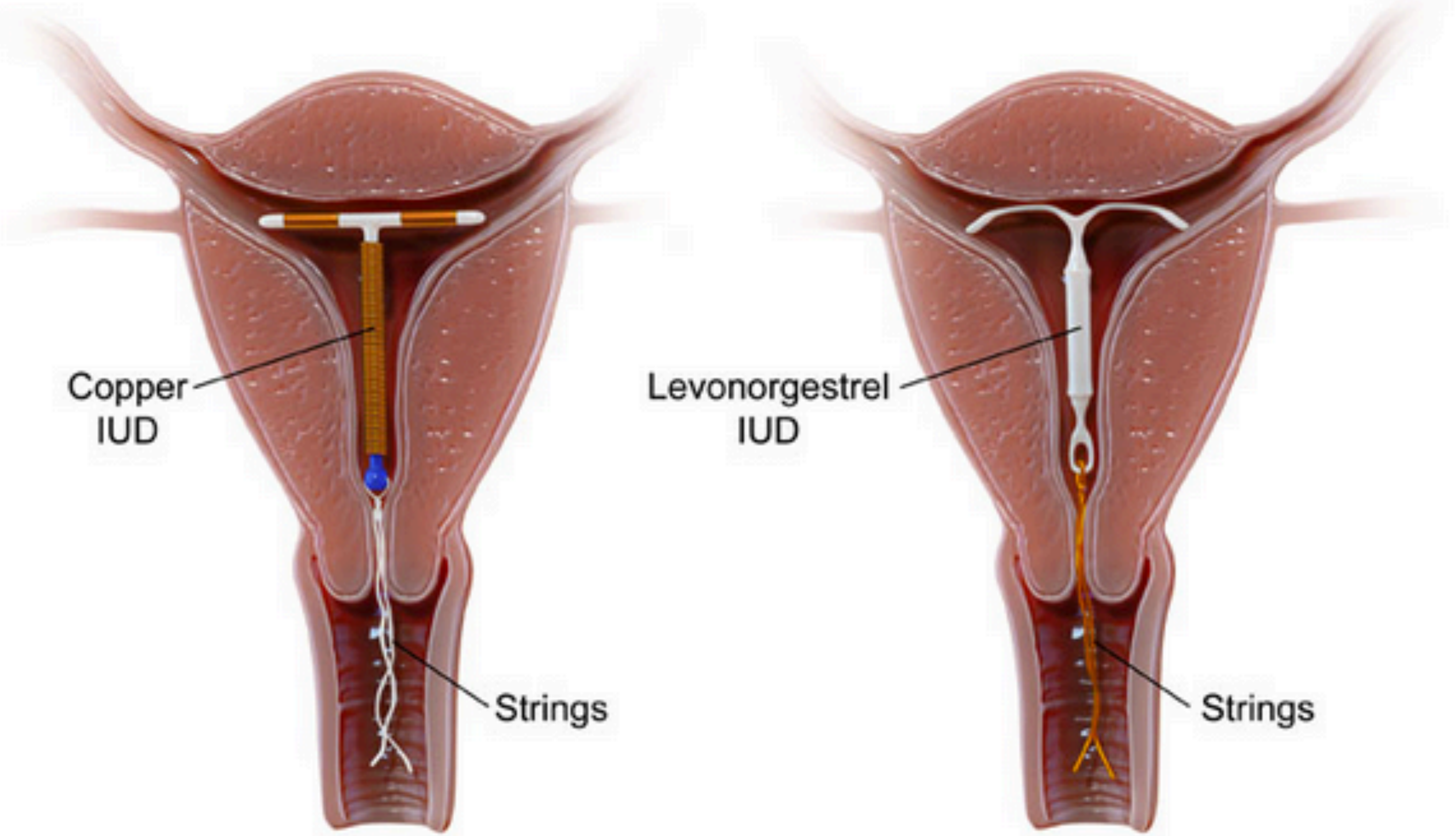
Hemodynamic measurements in shock

Parameter	Normal	Hypovolemic shock	Cardiogenic shock	Septic shock
Right atrial pressure (preload)	Mean of 4 mm Hg	↓	↑	Normal to slight ↓
Pulmonary capillary wedge pressure (preload)	Mean of 9 mm Hg	↓	↑	Normal to slight ↓
Cardiac index (pump function)	2.8-4.2 L/min/m^2	↓	↓↓	↑
Systemic vascular resistance (afterload)	Mean of 1150 dynes*sec/cm^5	↑	↑	↓
Mixed venous oxygen saturation	60%-80%	↓	↓	↑

Contraception options

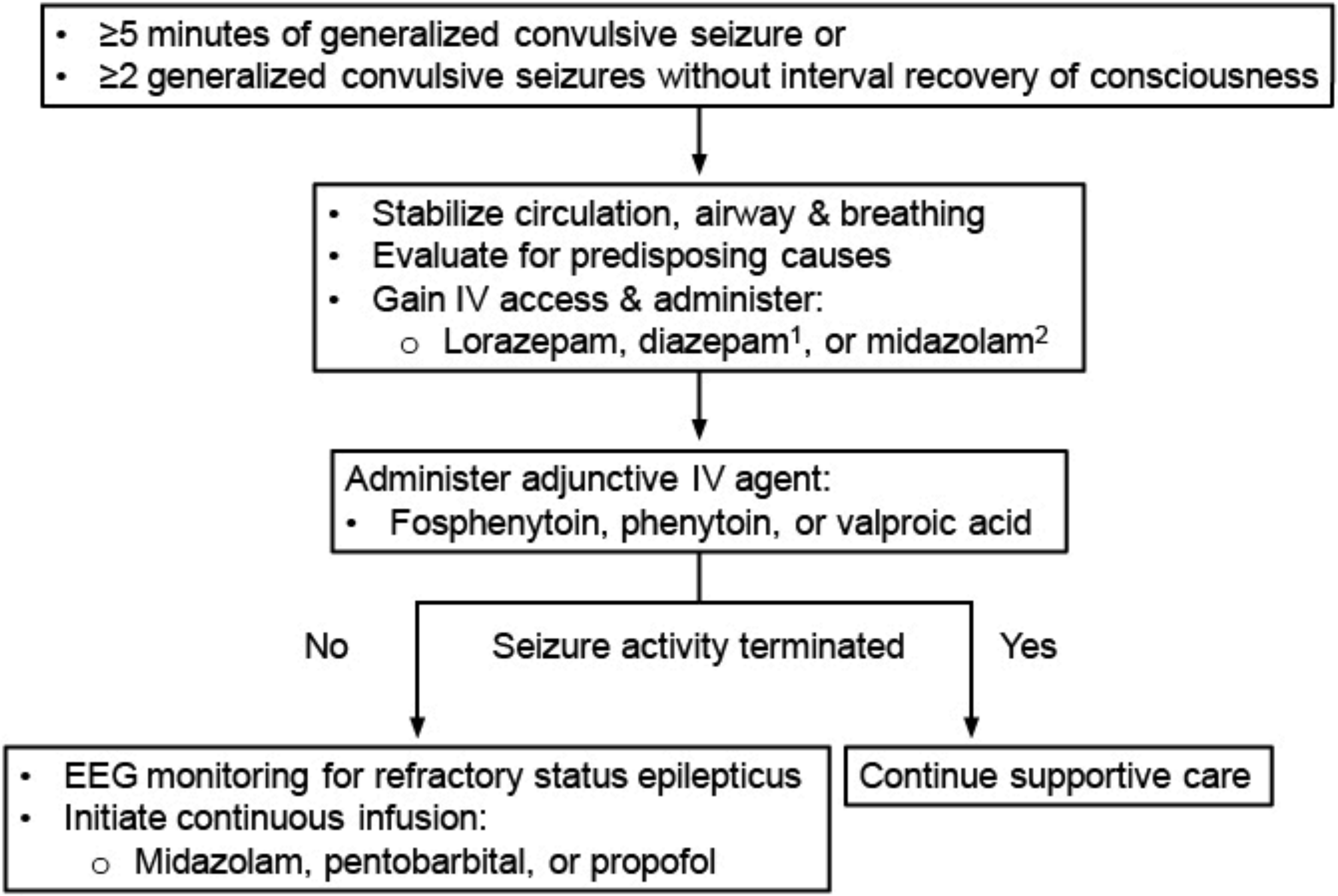
Type	**Effectiveness with typical use**
Intrauterine device	>99%
Implant	>99%
Injection	94%
Pills, patch, ring	91%
Condom	80%
Withdrawal	75%

Intrauterine devices (IUD)


Copper IUD
Strings
Levonorgestrel IUD
Strings

Causes endometrial inflammation
(toxic to sperm and ova)

Thickens cervical mucus (blocks sperm entry)
Thins uterine lining (decreases menstrual bleeding)



- ≥5 minutes of generalized convulsive seizure or
- ≥2 generalized convulsive seizures without interval recovery of consciousness

- Stabilize circulation, airway & breathing
- Evaluate for predisposing causes
- Gain IV access & administer:
  - Lorazepam, diazepam[1], or midazolam[2]

Administer adjunctive IV agent:
- Fosphenytoin, phenytoin, or valproic acid

Seizure activity terminated

No

- EEG monitoring for refractory status epilepticus
- Initiate continuous infusion:
  - Midazolam, pentobarbital, or propofol

Yes

Continue supportive care

[1] May also be administered per rectum.

[2] May also be administered intramuscularly.